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Contractor Sales Possibilities of Ventilating Fans

This Almost Virgin Field Presents a Prospect in Nearly Every Residence, Store, Office, Public Building, Lodge Hall, Theater, Restaurant, Lunch Room, Industrial Plant and Other Places

By G. C. BREIDERT

Ilg Electric Ventilating Co., Chicago.

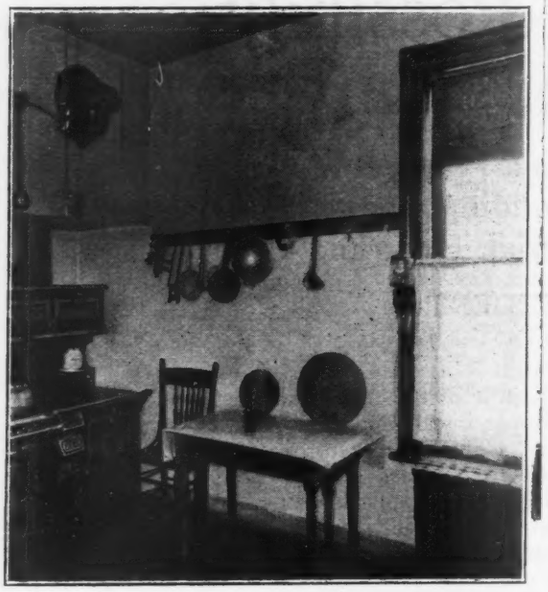
Ventilation has received less attention from the contractor-dealer than has any other electrical application one can name offhand. Yet ventilation presents an unlimited field that offers scarcely any resistance to development and pays a double profit to those who go after the business —a profit on the sale of ventilating equipment and another profit on its installation.

Little or no special training is necessary to the proper installation of ventilating fans and blowers. The manufacturers furnish very comprehensive charts, designs and instructions that are found applicable in all but a few special situations that may be quickly met upon communication with the factory. As for sales argument, there is not another electrical appliance on

Electric Ventilating Fan in Candy Store Installed in One Section of Window Above Wall Case.—Heavy Odors and Flies Are Eliminated and the Atmosphere Rendered Wholesome and Inviting.

the market that presents such a wealth of plausible and convincing reason as for the installation of ventilating equipment.

State legislatures have enacted laws, health boards have made rules and societies and organizations of various kinds have sought to instruct the public that efficient ventilation is the



Installation of Ventilating Fan in Typical Home Kitchen for Elimination of Smoke, Cooking Odors and Foul Air.

basic principle of health and general welfare. Newspapers and periodicals are constantly preaching more ventilation. General ventilation is possible during the heat of summer in many buildings through the opening of windows and doors, but the contractor should experience no difficulty in convincing prospective customers that the crying need for ventilation is during the chill of late fall, early spring and winter when the air of closed buildings quickly becomes stagnant and positively poisonous unless frequently changed. Then, there is the problem of fumes from cooking in residence kitchens as well as in public eating places, the only solution for which, summer and winter, is an exhaust fan of proper capacity. And the industrial plants, with their dust, fumes and foul air resulting from processes of fabrication, offer an immense field for the sale and installation of ventilating equipment.

Ventilators Needed in Nearly Every Place Wired for Electricity.

So great are the necessities for efficient ventilation in work shops, factories, mills, foundries and plants of all kinds where machinery is in operation, or where greater production is possible in proportion to the elimination of dust, fumes, vapors, gasses or vitiated air, that the subject of industrial ventilation is worthy of special consideration. In order to treat this branch of the subject more thoroughly, and to place before the electrical contractor-dealer more complete and valuable data that will be of substantial assistance to him in developing the field, Electrical Review will present in an early issue an exclusive article on industrial ventilation.

Every place that is wired for electricity presents a possibility for the installation of ventilating fans. The kitchen of every home, whether in apartment building or cottage, should be equipped with a ventilating fan which, while it exhausts the fumes of cooking from the kitchen, also draws stale air from other rooms on the same floor and provides a clean wholesome atmosphere throughout the entire house or apartment. Simple instructions and diagrams furnished by the manufacturer make it easy for the contractor to install this home ventilation and instruct the householder how to obtain the greatest comfort and benefit therefrom. Just a few months of this kind of home ventilation will more than pay for its installation in the savings on redecoration of rooms because of grease and dirt, and in medical bills and the greater comfort and individual energy and efficiency of members of the household. In the properly ventilated home there is no attraction for flies, moths or other annoying or destructive insects. The purer atmosphere induces the healthy body that is thus fortified against common ailments and more serious diseases. And a most convincing argument for such a home installation is that its total cost is less than that of a good overcoat.

After a man has enjoyed the benefits of a home ventilating installation, if he is an office man—one who is employed in or has an office of his own in which he employs others—in one of the large office buildings down town, he is a well prepared prospect for adequate ventilation. Even if his office is not in a big building in the congested district, but in a single-story structure with one or several rooms, attached to or apart from a manufacturing or other business, he can be easily convinced of the value of an office ventilating installation.

Business Offices Present Fertile Field for Ventilator Installations.

Production is just as essential in the business office as in the factory or salesroom and every office man and woman knows that brain power is accelerated or retarded accordingly as the air

Pure Air in the Office Induces More Efficient Work and Mental Energy.

in the office is made wholesome or permitted to become stagnant. In offices where more than one person is employed there is always to be found at least one person who cannot endure an open window or the slightest draft. When the air becomes "close" or vitiated through lack of ventilation its effect upon the workers in routine positions becomes gradually noticeable by producing lassitude, yawning and finally a condition of drowsiness to relieve which it is usually necessary to leave the room and walk into the hall or elsewhere until the tortured human system is revived by fresher air.

Many people attribute this condition to the monotony of most sedentary occupations, and it is true that a momentary distraction or disturbance of the routine will revive and energize the occupants of such a room, but the relief is a false one and the fetid air soon renews its poisonous narcosis and the consequent lethargy impedes work and stagnates the powers of creation and development in the human mind.

The solution is the installation of an electric ventilator. The ventilator works quietly and efficiently, producing frequent changes in the atmosphere and keeping it fresh and clean without producing drafts or disturbing or chilling the most sensitive worker. The result is manifest immediately in more efficient brain power, greater activity and more accurate work. The cost of several ventilator installations is saved and produced in a very short time by the greater vitality and productive energy resulting from proper ventilation in the office.

Many good clerks, stenographers, accountants and other classes of office workers have failed to produce effective results or work up to higher positions—not a few of them have suffered ruined health—all for lack of proper ventilation in their work rooms. Many an official has deplored the lack of organization spirit and working efficiency among his office forces and never thought of so simple and inexpensive a stimulant as a ventilator fan. It will be money in your pocket and praises to your name if you will tell them, Mr. Electrical Contractor.

All Classes of Stores Should Be Equipped With Ventilator Fans.

Thus far we have only briefly outlined the sales possibilities and a few arguments for use by the electrical contractor in marketing ventilator fans in the home and the business office. Without further hints as to still wider fields for this appliance any alert contractor can develop sufficient new business in his immediate vicinity to keep him profitably employed for many months. But a few more hints may be added to this article for good measure, together with the promise of other valuable disclosures and details in future issues of Electrical Review.

One large electric ventilator manufacturer in Chicago has already launched a large sales and advertising campaign in which contractor-dealers are being given the almost priceless results of years of ventilating research and development. The electrical contractor who is fortunate and farseeing enough to take advantage of such a campaign will not worry about the return of prosperity. He will be banking the results of

Installation of Ventilator Fan in an Electric Bakery. Ventilator May Be Seen at Left Just Above Low Partition Which Separates Salesroom From Room in Which the Ovens Are Operated.

Section in Interior of Drugstore Showing Installation of a Ventilator Fan—Arrow Points to Fan.

wise discernment on his part and materially improve the business conditions about him.

And here is another worth-while hint. The electrical contractor who begins to develop the ventilator business in his locality now need not be afraid of exhausting his field. By seeking cooperation with the architects and building contractors he will be able to have his ventilators specified in nearly every new building, to be installed with the other electrical work while the building is under construction.

Retail stores of every description—groceries, drugs, meats, clothing, drygoods, department stores, etc.—abound in the neighborhood of every electrical contractor. Every one of them should be equipped with ventilators from the standpoint of good business policy if not for the health and comfort of the management and sales people. Let us see what argument could be presented to favorably impress the proprietor with the dollars-and-cents value of proper ventilation in his store.

People coming from the street into a store could, if blindfolded, readily distinguish the class of goods carried by the characteristic odors peculiar to them. Even package goods give off a characteristic odor. In stores that are without ventilating devices the fumes and odors are positively offensive to many sensitive people who come in to trade. This is particularly true in drugstores and groceries. In the former the pungent fumes of various drugs, perfumes and toilet articles combine to fairly stifle sensitive nostrils and frequently cause dizziness that is only relieved by the outer air. Still more distressing is the odor in many groceries of vegetables and fruits—some of them over ripe or in the first stages of decay—mingled with the odors from hundreds of other food and dairy products. And these are the odors that attract and propagate flies to further nauseate the customer. Even the odors of drygoods and clothing are oppressive to some and their elimination at least induces a more wholesome atmosphere.

The proof of the above argument will be found by visiting a store that is efficiently ventilated. The salespeople appear to be more alert and courteous. They possess the energy, eagerness to please and the personal interest and sympathy that wins the customer and holds the trade. The atmosphere of the store is clean and wholesome and the customer seems to feel that the goods are more select, more delectable. People like to trade in such a place even when it is some distance away—and they always create more trade by telling their neighbors.

Retail merchants in every line have been and are still enjoying greater prosperity through the taking of greater profits than formerly. There are fewer failures among them and they present the best kind of prospects for the installation of ventilator fans.

In addition to residences, business offices and retail stores there are still larger profits for the electrical contractor in the sale and installation of larger ventilating units in lodge halls, public buildings, theaters, clubs, restaurants, hotel kitchens, cafes, lunch rooms, factories, garages and many other places. These will be dealt with in future articles.

Contractor-dealers who have already started campaigns for installing ventilator fans are finding them remarkably easy to sell. In a booklet containing sales plan and installation instructions, put out by the Ilg Electric Ventilating Co., the statement is made that "for every argument that ever sold a washing machine or vacuum cleaner there are five arguments to be advanced for the ventilating fan—and these arguments are based upon fundamental facts that strike a responsive chord with man, woman and child. Every home owner and business man can afford a ventilating fan because its cost is nominal—less than a good

Electric Ventilator Installation in a Small Drygoods Store.

washer, vacuum cleaner, ironer, etc. Thus the volume of sales does not limit or classify the consumer according to financial means. And the entire transaction is closed when the sale is made and the installation is completed—no grief, worry or expense for after service—the guarantee of the manufacturer covers the complete unit, both fan and motor."

Child Interest a Factor in Making Appliance Sales

Appeal Through Children Is One of the Surest Approaches to Parents—Electrical Toys in Window Displays—Simple Presents for Little Ones Should Suggest Electrical Household Devices

By KATHRYN MADDOCK

If it is true that the way to reach a man is via the well-known dining table, is it not equally certain that the route to the mother's heart is by way of the youngsters? It is now commonly accepted in merchandising that the really telling appeal is the appeal to the feelings, but one wonders whether many electrical dealers do not keep their eyes too closely upon their account books to see much of the human side of their customers' interests. How many, for instance, capitalize contact with the children as they might?

Women who come into a store are not just automatons with purses. They are real folks who care a lot about their homes, and most of all for their children. A salesman may talk about the beauties of a vacuum cleaner all day and be only a bore to the housewife if he fails to relate it intimately with these home interests. Of course, there are women who neglect their children, but they are very much in the minority. If you would measure the appeal which the little folk make watch movie audiences when children appear on the screen. Children, puppies and kittens are always sure of an immediate response. People are universally fond of them.

During the recent past when Red Cross appeals and war savings stamp campaigns lagged their promoters took them into the schools. They roused the youngsters who went home with the message and brought a response from thousands of homes which had not been reached by any other means. The electrical man, of course, has no such easy entree into the schools, but if he will keep this selling angle in mind he will find surprisingly many opportunities from time to time to win the interest of the boys and girls in his shop and to appeal to the mothers through the children.

Specific Example of Appeal to Children That Is Always in Season.

Why not, for instance, play up electrical toys in the window every once in a while? Christmas is not the only time when little people care about trains and steam engines and other marvelous contraptions that "go by electricity," and a few in the window will set all the small folk agog over your shop, and incidentally bring your name to the parents' ears.

The Medinah Electric Co. of Chicago in arranging some lectures on electrical housekeeping

Vacuum Cleaner Being Used to Provide Entertainment for the Daughter of the Family.

Vacuum Cleaner Useful for Airing and Removing Dirt From Baby Buggy.

for a certain mothers' club recently hit upon a splendid means of reaching the mothers through children. The president of the mothers' club in this case arranged with the teachers at the school to have the boys and girls, as one of their lessons, write notes of invitation to their mothers, asking them to attend the appointed meeting of the club

Light Articles of Baby Clothing Are Dried Easily and Quickly by Use of Hair Drier.

at which the electrical men were to speak. These invitations the children took home and, needless to say, the result was a large attendance. This method of announcing meetings is used by mothers' clubs in most cities. The electrical man does well to cultivate acquaintance with such organizations.

A prize pony contest for the children was a big drawing card for the Indianapolis Light, Heat & Power Co. not long ago. This company offered a Shetland pony—the supreme desire of every youngster's heart—for the best 25-word definition of the word "dependable" as applied to the electric appliances on sale in their shop. With the definition each boy or girl was also required to submit the names of two possible purchasers of cleaners or washers. The contestants numbered 550, and the accompanying prospect list of 1100 names was of course "pie" to the power company.

Use of Dolls in Display Windows Sure to Prove Attractive.

It's worth while to remember, too, that the more often we can associate children with the actual use of electrical appliances the more easily and effectively can we dispel any feeling that there is anything dangerous about them. Use large dolls to represent children in a window display, now and then, if you can find attractive ones. This has been done with telling effect by electrical dealers. Put a balloon and doll cleaner toy in the window, and tell all the mothers you know about it.

"Better than soothing syrup for the baby" might be the caption to describe this stunt. It was originally worked out by the boys in one home as a toy for their amusement and the delight of younger sisters and brothers. Dealers have used it at county fairs and in window displays, but it deserves to be better known as an attraction for the nursery. Any fond father or brother of a mechanical inclination will have a good time putting together this cleaner toy if the mother herself does not wish to do so. It consists merely of a toy balloon from which is suspended a string and toothpick trapeze clutched by a giddy celluloid doll dressed in gay colors. The attachment hose of the cleaner is fastened to the bag side, the switch is snapped on, and the doll and balloon float above the hose, dancing about in the stream of air.

Specific Details of Small But Definite Importance Should Be Indicated.

Call the mother's attention to little tricks like using the hair drier on the children's clothes when a dress must be ironed and put on in a hurry. Show her that the fan of the cleaner, when the bag is removed, creates a blast of air which will quickly dry little folks' shoes on muddy days. Tell her that the cleaner she considers buying is light enough for a girl of 10 yrs. to carry upstairs. She must understand that there is nothing about these household aids to harm even the youngsters.

The candidate for the legislature who went around kissing all the babies in his district has been laughed at for years, but his tactics were not so far from being right at that—he knew that it is through the children always that one finds the surest approach to the parents. It is a thought for the merchandiser to keep in a mental pigeonhole where it will be always at hand for ready reference.

QUESTIONNAIRE REVEALS INCREASE IN WIRED HOMES.

Manufacturers and dealers generally have exaggerated in their minds the dearth of a market for electrical appliances. Their argument has been that little new building was being done and that few old houses were being wired. The Society for Electrical Development sent out a questionnaire to about 1000 central stations a few days ago, asking:

(1) Population reached by company lines.
(2) Number of wired homes.
(3) Net number of wired homes added, 1919.
(4) Net number of wired homes added, 1920.
(5) Net number of wired homes added first 6 mo., 1921.

To date—Sept. 15—320 replies with data have been received. Of these, 297, or 93%, include figures for the first 6 mo. of 1921. In 114 cases, or 38%, the rate of increase for 1921 is higher than for 1920, and in 47 other cases, while not equal to 1920 record, the number is higher than for 1919. Only three replies showed a loss in number of residence customers.

The net increase shown in wired homes in 6 mo. of 1921 is 183,301, or at the rate of 366,602 for the present year, and this for only 297 companies.

Is the present depression not a "state of mind" rather than a fact? These figures certainly indicate that there is plenty of opportunity for business if contractor-dealers will go after it.

Electricity, says the U. S. Geological Survey, saves the nation about 41,000,000 tons of coal a year.

Electric Kitchen Installation for Public Dining Rooms

High First Cost of Equipment for Preparation of Victuals and Service in Hotels and Restaurants Is More Than Balanced by Lower Operating Cost, Besides Better Results and Sanitation

By K. EHRGOTT

Electrical Engineer, Duparquet, Huot & Moneuse Co., Chicago.

Application of electric heat to the preparation of foods in the home has paved the way for the solution of problems in cooking on a large scale. Extensive experiments carried on in the construction of heating elements, direct application of heat to the cooking of foods, and the insulation against heat loss during the cooking operation, have led to the present construction of electrically heated hotel and restaurant kitchen and service equipment.

In the past the use of coal for cooking in the restaurant kitchen has made the work of a cook disagreeable because of the intense heat produced, the ashes and dirt accumulating from the handling of coal, and the troubles encountered through poor draft, burned out grates and linings, buckled stove tops and sooty kettles and pans. The introduction of gas eliminated some of these drawbacks, i.e., the handling of coal and ashes, the intense continuous heat and the work of building and cleaning the fires. But gas also has its drawbacks. In order that the maximum heat units be obtained from gas, complete combustion is at all times necessary. Since combustion occurs provision must be made for the removal of the products of combustion from the room and for a plentiful supply of fresh air to support combustion. Consequently, a large proportion of the heat generated "goes up the flue" or escapes into the room. The danger of explosion and a fire hazard always exists when gas is used, hence the oven of a gas stove must be so constructed that an explosive mixture cannot accumulate.

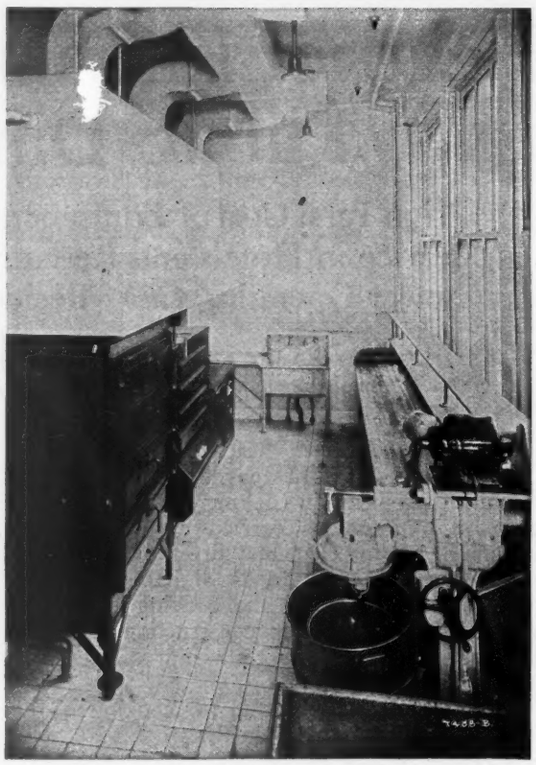
The possibility of insulating against heat loss, the direct application of heat to the material being cooked, the absolute uniformity of electrically generated heat and extreme flexibility of control, and the conservation of heat through the application of the fireless-cooker principle have insured the practicability and success of heating of restaurant equipment by electricity. One of the popular fallacies regarding the use of electricity for cooking is that the fuel cost is prohibitive. With gas at $1 per 1000 cu. ft., and electricity at $0.03 per kw-hr. the cost of operation of electrically heated equipment is the same as the fuel cost for gas heated equipment when both fuels are used as freely and as wastefully as gas. By properly insulating against heat loss and by applying just the right degree of heat to the article being prepared, after cooking has started, the cost of fuel per heat unit consumed per pound of finished food product is greatly reduced.

A hotel range must be so constructed that there is sufficient heat to insure rapid frying or only enough heat to keep the contents of a 30-gal. stock kettle simmering. The heat must be applied directly to the container in which the food is being prepared without undue loss in transmission from the heating device to the food itself. The burner must be of indestructible construction, capable of supporting a weight of at least 500 lbs. at red heat without buckling, and so arranged that substances spilled on the surface of the plate will not injure the heating elements. The cast-in steel, sheathed-wire hot plate manufactured by the General Electric Co. meets all of these requirements. The heating element itself

Vegetable Kitchen in Employes' Cafeteria in Marshall Field & Co. Retail Store, Chicago.

consists of a nickel-chromium wire inclosed in a steel tube and insulated from this tube with magnesium oxide. Two of these elements are placed in a mold and hot steel is cast around them to form a smooth surface plate approximately 1 in. in thickness by 9 ins. wide and 24 ins. long. The elements in these plates are connected to a 3-heat snap switch so arranged that high heat is obtained by operating the two elements in the plate in parallel; medium heat is obtained by cutting out one of these elements, and low heat by operating the two elements in series.

These plates consume 2000 watts on high heat, which is sufficient to heat the plates to a dull red in 1 hr. 15 min. For ordinary cooking purposes, where a temperature of approximately 350 deg. F. is required at the beginning of the operation, the time required to preheat is approximately 45 min. High heat is used only at the beginning of an operation to bring the food to a boil, the plate being reduced to medium heat for rapid boiling or low heat for simmering. All the heat generated is transmitted directly to the food, as the plate is in direct contact with the food container. There is little opportunity for loss of heat through radiation or convection to the surrounding atmosphere, as a very large percentage is transferred directly to the food by direct conduction between the hot plate and the vessel in which the food is being cooked.



Electric Kitchen in a Cafeteria.

Roasting and Baking Ovens Prove to Be Quite Economical.

The real opportunity for the conservation of heat is encountered in the design and construction of the roasting and baking oven usually built into every hotel range. The maximum roasting and baking temperature is usually in the neighborhood of 450 deg. F. The electrically heated oven must therefore be designed to attain this temperature rapidly and then to maintain this temperature indefinitely by the use of a minimum amount of energy. This is accomplished by insulating the oven walls with from 2.5 to 3 ins. of the best heat insulating material obtainable, and by providing abundant heat for preheating purposes. The oven is so designed that after preheating the maximum temperature may be maintained, when the oven is empty, on low heat; medium heat is required to maintain roasting or baking temperature when the oven is loaded. After the oven has attained baking temperature and the article to be roasted is placed in the oven high heat is maintained for a long enough period to thoroughly sear the surface of the meat, then the heat may be reduced to medium and the roasting operation continued to within 0.5 hr. of the time when the meat is supposed to be removed from the oven. During this last 0.5 hr. the energy is turned off entirely and the roasting process is completed by the fireless-cooker principle.

In the operation of a gas oven the large amount of fresh air that must be supplied to support combustion and to keep the oven free from poisonous and explosive gases also carries off a large percentage of the moisture that has evaporated from the meat during the cooking process. Approximately 85% of the heat generated by the use of

Duparquet Fry Range Used in the Henrici Restaurant, Chicago.

gas in an oven of this type escapes into the chimney. The electric oven is so constructed that there is very little evaporation lost from meats cooked in it. The oven is provided with only a small flue which may be opened when roasting or baking articles that give off a large amount of moisture or fumes of any kind which must be cleared from the oven. However, during the roasting of meat, the moisture at first evaporated from the meat saturates the air in the oven, and when this air has reached a point of saturation no further evaporation takes place. The natural moisture and juices contained in the meat are therefore employed in the cooking process. Extensive experiments have been carried on to obtain comparative data on the loss in evaporation between meats roasted in an electric oven and in ovens of the old type. Results of these experiments indicate that in the ordinary coal or gas

Electrically Heated Pastry Oven in Restaurant Kitchen.

oven the evaporation amounts to about 25% of the total weight of the meat when it was placed in the oven. In the electric oven the loss due to evaporation averages approximately 10%. This saving results in a greater bulk thus producing more orders per pound of meat than can be obtained when gas or coal are used for roasting.

High First Cost of Equipment Balanced by Reduced Operating Costs.

The fireless-cooker principle is also employed in the construction of bake ovens, stock kettles, fry kettles, coffee urns, and in all devices in which it is necessary to retain heat for any length of time. In such devices as frying ranges, griddles and broilers where the heat is generated in an exposed surface and is applied directly to the article being cooked, the cooking surface is so insulated that the heat generated is directed so that it is absorbed only by the food under preparation. The construction described above assures the practical use of over 70% of the heat generated.

Prospective users of electrically heated hotel equipment usually object to the high first cost of the fixtures. There are several reasons for this high price as compared with gas or coal equipment. In the construction of electrically heated equipment the bare fixture itself costs as much to construct as the gas or coal fixture. To this cost must be added the additional cost of heat insulating material, electric units, switches, fuses, wiring and the labor for adding these features to the fixture. The electrical portion of the fixture alone covered by these features costs the manufacturer approximately as much as the original gas or coal fixture. When one considers the fact that with a gas or coal range new linings, new burners and new tops are required approximately every 6 mo. or oftener, the increased first cost of the electric range is really a saving as the replacements and repairs experienced with the old style equipment are entirely eliminated. The electric units used in these devices are all guaranteed for material and workmanship for a period of 1 yr. Thus far, of a large number of installations furnished by one company, there has been only one failure of an electric top unit in a period of 2 yrs. The electric device also eliminates the labor required in the handling of coal, removal of ashes and removal of grease and adjustments on gas burners. Occasionally a fuse is blown, but this is very readily replaced by the house engineer or electrician.

With a $0.02 electric rate the cost of operating a 4-ft. section of hotel range is approximately $80 per mo. for the average restaurant which serves three meals a day and short orders in addition. The average gas range capable of doing the same amount of work consumes approximately $100 worth of gas per month. Where the electric rates are favorable the installation of electrically heated hotel equipment proves an economy through the reduction of repair bills and the reduction of fuel cost as outlined above.

As the use of electrically heated hotel equipment becomes more general the prejudice which now exists against it among chefs and cooks will be gradually overcome. As these men are trained in the use of electric equipment it will prove more and more economical, due to the greater care exercised by the help in the use of energy. Of course, the continued use of electricity for cooking purposes will help the manufacturers incorporate improvements which will be called to their attention from time to time, each improvement meaning a further economy in heat conservation. Increased use of electrically heated devices may also enable the manufacturer to reduce his prices because of a lower manufacturing cost when such devices are built in quantity. It is believed that the next 10 yrs. will see a vast increase in the use of electric hotel equipment, especially in hotels and institutions which pride themselves on the appearance of their kitchens and wish to maintain a high reputation for the quality of the foods served.

The latest reports regarding the proposals for the electrification of certain sections of the government railways of the Union of South Africa are to the effect that no bids have as yet been accepted, and that it is possible that the program may not be carried through at this time to the full extent planned for.

WAGE ARBITRATION IS BASED UPON JUST PRINCIPLES.

Judge Landis Satisfies Chicago Electricians With Decisions in Building Trades Controversy Founded on Comprehensive Rules.

For many months building construction work was held up in Chicago through the inability of labor affiliated with the building trades council and employing contractors to get together on a code of working principles and a downward revision of the wage scale of the various crafts. The controversy was finally submitted a few months ago to Judge K. M. Landis, of the Federal Court, who first submitted a code of principles governing the consideration of agreements and working rules affecting a just wage scale, asking as a condition of his services as arbitrator that the various labor unions and the employing contractors subscribe to and agree to abide with all decisions based upon the code of principles.

The contractors and a majority of the union craftsmen signified agreement and Judge Landis proceeded to hold exhaustive hearings with a view to untangling the intricate questions of the controversy and determining the proper wage scale for each craft. In the decision handed down recently by the eminent jurist the electricians were awarded $1.10 an hr. While some of the crafts refused absolutely to accept the decision, and others are now seeking a rehearing, the electricians were the first to voice acceptance. The rate of wages of the various crafts was determined somewhat by the nature of the agreements insisted upon by the different union organizations as between their unions and the employers' organizations. The code of principles for determining the limitations of these various agreements and the scale of wages for each is as follows:

PRINCIPLES GOVERNING CONSIDERATION OF AGREEMENTS AND WORKING RULES.

ARTICLE I. Monopolistic elements of associations or unions are intolerable unless—

(1) The public is served more economically with them than without them.
(2) Unless any one qualified may join them without hindrance or discrimination.
(3) Unless they serve any one on demand without discrimination.
(4) Unless sufficient apprentices be taught to supply enough skilful managers and workers.
(5) Unless working rules and conditions eliminate waste of time, effort and material; increase quality and quantity of product; encourage improved methods, materials and appliances; produce increased skill and contentment of the workers, and help to preserve peace in the community.

ARTICLE II. Other things being equal, trades should have higher wages, or wages above the average—

(1) If the work is more hazardous.
(2) If greater skill is required.
(3) If a longer term of apprenticeship is required to become proficient.
(4) If the work is intermittent or unsteady due to weather or seasonable demand.

ARTICLE III. Other things being equal, trades having rules or conditions that produce or permit waste should have a lower wage, or a lower than the average rate—

(1) Rules that limit or curtail in any way the amount of work per man, consistent with reasonable comfort and well-being.
(2) Rules that require ordinary travel to or from the job to be on employer's time, or otherwise waste time paid for.
(3) Rules requiring skilled men or high-rate men to do, or that other trades could do more economically.
(4) Rules that expressly or by inference interfere with the manager or foreman in the dispatch of the work or the use of new or improved methods, materials or appliances.
(5) Rules that require work to be done by hand that could be done better or more economically by machinery, tools or other improved methods.
(6) Rules that require work to be done on the building that could be done better or more economically in the shop.
(7) Rules requiring excessive rates for overtime, or overtime rates for shaft work.
(8) Rules requiring unnecessary foremen, shop or job stewards or pay for men or the time of men who do not render corresponding services.
(9) Rules requiring unnecessary helpers or assistants.
(10) Rules that limit the number of members in the associations or unions, or unreasonably limit apprenticeships.

Under the rulings of Judge Landis it is understood that where union craftsmen refuse to accept the decision and refuse to work, or strike without first seeking arbitration, the employing contractors may declare an "open shop" and employ non-union labor. Resumption of building activities is looked forward to with hopeful interest by the electrical industry.

U. S. DEVELOPMENT TREMENDOUS.

One of the most reassuring factors in connection with the public utility industry is the phenomenal expansion which has been seen over the last decade. While this is generally realized, it is somewhat necessary to resort to figures to bring out the full significance. Between 1910 and 1920, the population of the United States increased less than 15%, but the number of customers of the electric light and power companies increased over 250%, and the amount of electric energy sold increased over 350%. The expansion was not confined to any particular section of the country, but was distributed about equally throughout the United States.

Peoria is to be added to the long list of Illinois cities having one-man street cars. Advent of the new system was assured when the city council amended the old ordinance authorizing the Peoria Railway Co. to install them.

Motor-Control Equipment Used in Elevator Service—Part I.

Machines, Roping, Brakes and Motors Employed in Operation of Elevators—Features of Magnetic and Mechanical Controllers —Diagrams and Illustrations of Circuits and Control Devices

By G. J. KIRKGASSER and E. W. SEEGER

Elevator Machines.—The first electric elevators were installed about 30 yrs. ago, and since that time the popularity of motor drive for this service has increased until at the present time comparatively few elevators of any other type are being built. Even when hydraulic elevators are installed the pumps are frequently motor driven.

There are two common types of elevator machines—the drum type and the traction type. Drum-type machines are used extensively for freight service, slow-speed passenger service, medium-sped passenger service where the total travel of the car is not excessive, and on push-button-operated systems.

The drum-type machines usually consist of the driving motor, an electrically released brake, a worm gear reduction and the winding drum. A typical installation is shown in Fig. 124, and the usual arrangement of cables is shown in Fig. 125.

Traction-type machines are used principally for high-speed passenger service. They are similar to the drum type, except that a sheave is used instead of a winding drum. There are several methods of roping in use, but the majority of installations are arranged as shown in Fig. 126. The cable is fastened to the top of the car and is carried over the driving sheave *D*. It is then wound around the idler sheave *F*, around the driving sheave, back over the idler, and is finally attached to the counterweight. A similar roping shown in Fig. 127 can be used with what is known as the V-groove traction machine. The driving sheaves are scored with 60-deg. V-shaped grooves, and sufficient traction is obtained in this way so that the idler sheave is unnecessary.

Fig. 124.

Installation of Kleckhefer drum-type elevator machine showing slip-ring motor, motor-operated brake and full-magnetic controller.

For high-speed passenger machines the gear reduction is sometimes omitted and the motor connected directly to the driving sheave. The gearless traction machine, as it is called, requires an extremely large slow-speed motor and is seldom used with car speeds less than 500 ft. per min. It is smooth in operation, but is not efficient, except where few stops are made.

Elevator machines are usually mounted overhead, but in some cases the machine is placed

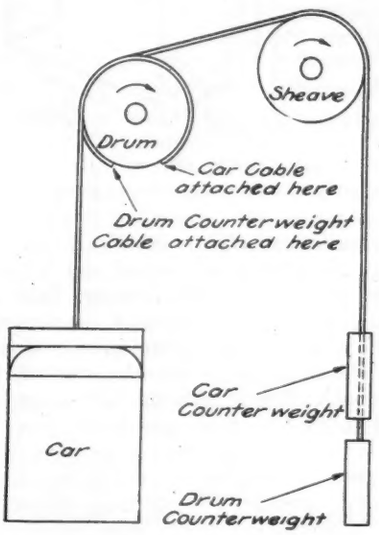


Fig. 125.

Typical arrangement of cables on drum-type elevator machine.

in the basement and idler sheaves are placed at the top of the hoistway. This arrangement has the advantage that the vibration strains are less than on an overhead machine, but the additional roping necessary is a decided disadvantage.

The simplest form of speed reduction between the motor and winding drum consists of a single worm and wheel. Fig. 128 shows a variation from this practice in which a tandem or duplex worm and gear are used. This arangement eliminates the end-thrust bearing which is necessary in the single-gear type. For very-low-speed elevator an additional gear reduction consisting of a pinion and an internal gear is sometimes placed between the worm wheel and winding drum.

Motors.—For slow-speed passenger and freight service (car speed up to 200 ft. per min.) compound-wound motors are generally used on d-c. service. The series field is used to obtain a high starting torque, but is short-circuited, when

the motor has accelerated, to prevent overspeeding if the load is "overhauling." "Slow down" is obtained by inserting the starting resistance in series with the motor armature and by placing resistance in parallel with the armature. Satisfactory results are obtained in this way where the car speed is not in excess of 200 ft. per min. When the operating speed is greater than 200 ft. per min. further speed control is obtained by means of inserting resistance in the shunt-field circuit. The increase in speed by shunt-field control is variable, but, in general, will amount to in the neighborhood of from 200 to 300%.

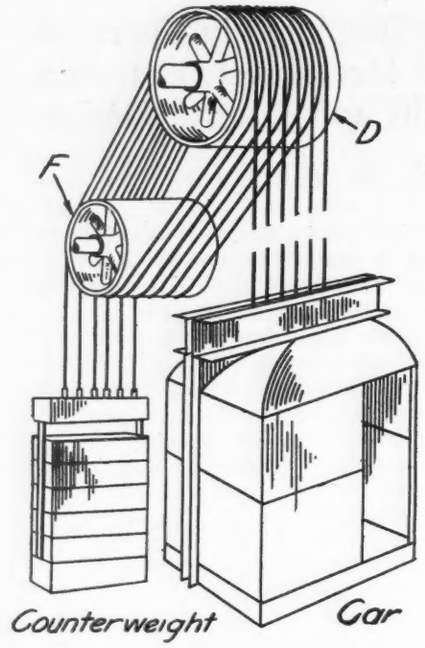


Fig. 126.
Roping of traction-type elevator installation.

Both high-torque squirrel-cage and slip-ring motors are used for slow-speed equipment operating on a-c. service. The starting torque of the high-torque motor is usually from two to two and one-half times the normal running torque of the motor, but the starting current is, in general, about three times the normal running current of the motor. For this reason the high-torque motor is seldom used in sizes above 25 hp.

Slip-ring motors are limited to installations where the car speed does not exceed 200 ft. per min., due to the fact that it is difficult to stop the car accurately at the landings at higher speeds. For car speeds between 200 and 350 ft. per min. 2-speed motors are used on a-c. service. The low-speed winding is usually designed for three times as many poles as the high-speed winding, and in this way the car speed can be reduced to one-third of full speed for making landings.

Brakes.—Nearly every electric elevator is equipped with a shoe brake placed between the motor and the gear reduction. On some slow-speed equipments the brake is released mechanically by the operating mechanism, but, in general, the brakes are electrically released. Fig. 128 shows very clearly the type of brake used on d-c. equipments, and the machine illustrated in Fig. 124 is supplied with an a-c. rotating-magnet brake which is quieter in operation than a solenoid-operated brake on alternating current.

Controller Requirements.—Controllers for elevator service must meet a number of exacting requirements. Safety is the primary consideration, because failure of the apparatus may result in a serious accident. Controllers for this service must be rugged, simple and reliable on account of the great frequency of operation. For passenger service the car must start and accelerate smoothly and stop accurately. Quiet operation is also essential for passenger service in apartment buildings, hospitals, etc., where noise is objectionable.

Methods of Operation.—There are three common methods of controlling the operation of electric elevators—by shipper rope, by a control switch located in the car, and by push buttons. Shipper-rope control is cheaper than the other methods and is used principally for freight service. The shipper rope is used for shifting belts in those cases where the combination of a straight and crossed belt is used for reversing, but now it more generally controls the operation of an electric reversing switch. Car-switch control is used on both passenger and freight equipments, the master or car switch located in the car making and breaking the coil circuits to the magnetic contactors on the control panel.

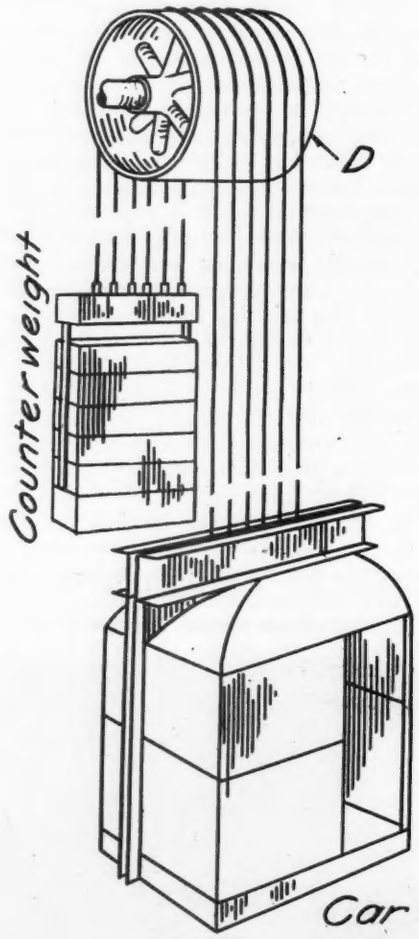


Fig. 127.
Arrangement of roping on V-groove traction-type elevator.

Push-button control is used for dumbwaiters

and for passenger equipments in apartment buildings, etc., where the service is so infrequent that the expense of an attendant is not justified.

Types of Controllers.—There are three types of elevator controllers. Full-mechanical controllers are those in which the functions of starting, accelerating, stopping and reversing are all performed without the use of electromagnets. Semimagnetic controllers consist of a reversing switch operated by a shipper rope which controls the starting, stopping and reversing of the equipment, and an automatic starter for accelerating the motor. Full-magnetic controllers are those in which all the functions are performed by means of electromagnets controlled either by a master switch in the car or by push buttons.

Full-Mechanical Controllers.—The simplest form of elevator controller is a plain reversing switch, as used in connection with high-torque squirrel-cage motors which can be connected directly to the supply circuit for starting. Reversing switches of the face-plate, knife-blade and drum types have been built for this service. The drum-type switch is preferred by the majority of elevator manufacturers, and Fig. 129 shows a

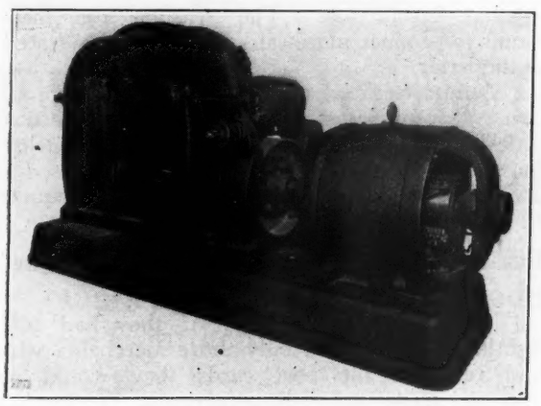


Fig. 128.

Tandem-gear elevator machine driven by a Roth Bros. d-c. elevator motor.

typical reversing switch using this construction. It is provided with a quick-break mechanism for reducing the burning and wear of contacts.

Some full-mechanical controllers are also used in connection with d-c. motors and slip-ring a-c. motors. It has usually been found, however, that a satisfactory mechanical controller for short-circuiting resistance in the motor circuit is just as expensive and no more reliable than an automatic starter.

Semimagnetic Controllers. — Semimagnetic controllers consist of a reversing switch similar to that used on full-mechanical equipments and an automatic starter. The quick-break feature is usually omitted from the reversing switch because the motor circuit is closed and opened by the automatic starter.

Fig. 130 shows the connections of a semimagnetic controller for use on d-c. circuits. When the reversing switch is thrown to the "up" position the initial movement makes the proper connections to the motor armature, and further movement of the switch completes the circuit to the coil of the main contactor S. This circuit may be traced from line L_1 to X_4, through the

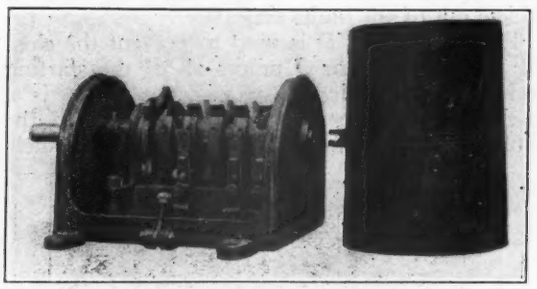


Fig. 129.

Quick make and break drum-type reversing switch for use with elevator machines controlled by shipper rope.

slack-cable switch, over-travel hoistway-limit switches, and final up-limit switch to M. From M the circuit is completed through the drum segments to X, through the coil of contactor S and the down-interlocking finger of the accelerating mechanism A to L_2. When the contactor S closes the brake is released and the motor starts with all resistance in circuit, and at the same time the coil of the accelerating mechanism A is energized. The solenoid A is retarded by the dashpot P so that the resistance R_1 to RN is short-circuited gradually by the fingers *1*, *2*, *3*, etc., until the motor is connected directly across the line. The series field of the motor and the series coil of the electric brake are also short-circuited by the last finger of the accelerating device. The use of the series coil causes the brake to release faster and also allows the use of a smaller brake solenoid. The fact that the series coil is in circuit only a short time makes it possible to work the winding hard for the time it is energized.

If the reversing switch is not thrown to the "off" position before the final landing is reached the equipment is stopped by the final limit switch which opens the circuit of the contactor S, thus

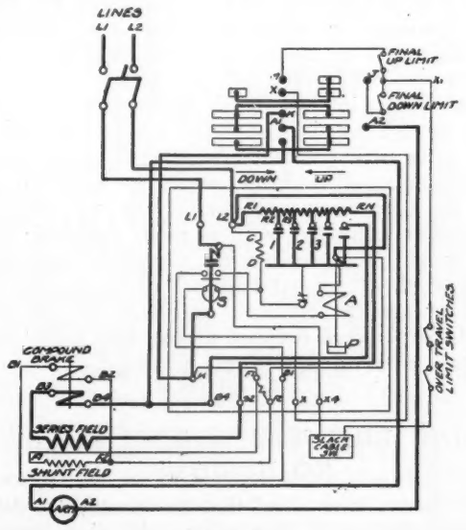


Fig. 130.

Connection diagram of d-c. semimagnetic elevator controller.

stopping the motor and setting the brake. If the reversing switch is then thrown in the opposite direction the car may be backed out of the limits. If, however, the car for any reason does not stop at the final limit the over-travel limit switch will

be tripped, and in this case the car must be backed out of the limits manually.

The resistance *CD* is used to prevent the closing of the contactor *S* unless all of the starting resistance is in circuit. Resistance F_1-F_2 is a discharge resistance placed in parallel with the shunt field. A high voltage is induced in the field

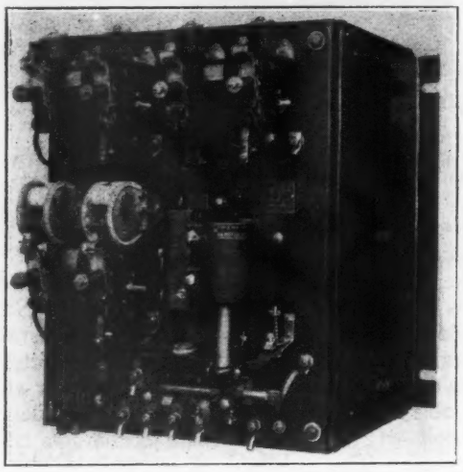


Fig. 131.

Semimagnetic a-c. elevator controller with magnetic main contactor and two accelerating contactors controlled by dashpot timing relay.

coils when the circuit is opened, and unless a discharge path is provided there is danger of an insulation breakdown.

Dynamic braking can be obtained with controllers of this type by the addition of a magnetic contactor which connects a dynamic-braking resistance across the armature when the controller is in the "off" position. In other cases this feature is obtained by means of contacts in the reversing switch.

Semimagnetic equipments usually have only one operating speed, but in some cases the controller is arranged so that a slow speed for making landings is obtained when the reversing switch is moved to an intermediate position between the "off" and "full-on" points.

Controllers for use with high-torque squirrel-cage motors consist simply of a reversing switch and a magnetic contactor, but for slip-ring motors additional aparatus is necessary for short-circuiting the secondary resistance. Fig. 131 shows a controller equipped with a main magnetic contactor and two accelerating contactors controlled by a dashpot timing relay. Semimagnetic controllers are, in general, preferred to the full-mechanical types because of the ease with which various safety features can be added.

(*To be continued.*)

DOING BUSINESS WHERE THERE IS NO BUSINESS.

No town is so dead that the contractor-dealer cannot find work that his neighboring business men will profit by giving him, if he only will seek out the needs and present them fairly. The following comments reproduced from *Beardslee Talks,* show how one man produced business where "there was no business":

"A certain dealer in a middle-western state wanted to determine for himself whether he could secure as much business as manufacturers' salesmen told him he could, and whether attractive profits could be realized on the sale of commercial lighting units, or whether all he had been told was merely 'salesmen's talk.'

"He had in his employ a young man who, he thought, was about on a par with the average lighting fixture salesman. This man could go after anything from a courthouse to a bungalow with a reasonable measure of success.

"The dealer and his salesman had a conference and mapped out a course of study and procedure. The only information they had on commercial lighting units was confined almost entirely to catalogs and other data furnished by the manufacturers of commercial lighting units. There were no new store buildings in sight, and apparently not a definite prospect with which to start, but they decided to canvass their business district which, roughly, consisted of 18 or 20 blocks.

"Soon they had compiled a list of the merchants who in their judgment were actually in need of better lighting. They then mailed to each merchant a letter that emphasized what better lighting would mean. They did not mention the cost of an actual installation, but dwelt on the increased sales that would result from a better lighting installation. The reasons for their claims to produce more sales were concisely stated in the letter.

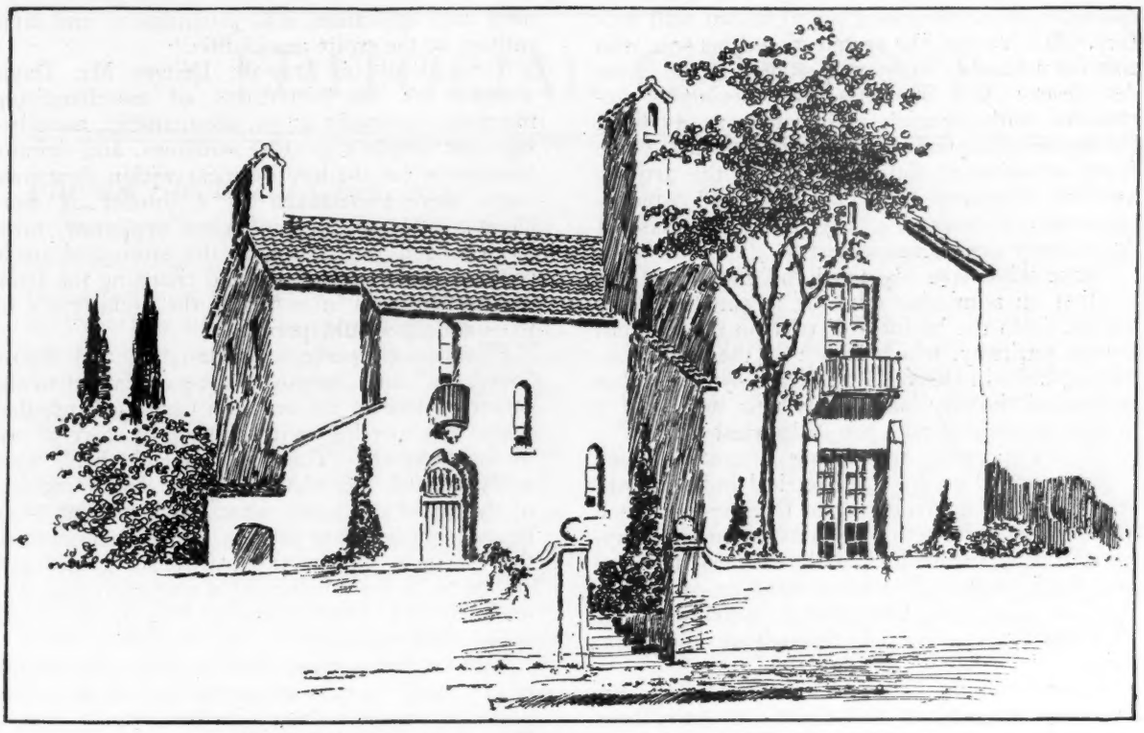
"About a week later they sent each of the prospects a second letter with which they included a little folder describing their method of improving the merchant's lighting, and they also inclosed a post card by which the merchant might request an interview with the salesman.

Personal Calls Required to "Put Over" Final Selling Arguments.

"This dealer tells us that if they had sold lighting equipment to only those merchants who had returned the post cards they would be ashamed to tell of their experience, but having laid down their "barrage" with the two letters and the little folder they were ready to call on each merchant and to enlarge upon the benefits and profits that would result to him from improved illumination in his store. It was up to the salesman to convince the merchant that new lighting equipment was not an expense, but a profitable investment. Naturally enough, they encountered merchants who had to be shown. The salesman's story sounded all right, but the merchants wanted to know that the units which they proposed would actually be a decided improvement on his system.

"For each of these skeptical ones they installed as many units as was necessary to make a fair demonstration and comparison. Sometimes they used two, and sometimes three or more. In all, they made about 20 demonstrations, and in every instance but two they sold not only the original samples, but sufficient equipment for the balance of the sales floors.

"This particular electrical dealer will tell you that there are many logical arguments in favor of good illumination in retail stores, and that they have found one of the easiest methods of getting new business. He claims good illumination is one of the essential forms of advertising for the retail selling of merchandise, and one that the merchant can least afford to be without."



Architect's Sketch of Electrical Home Planned for Construction in Denver.

Electric Home Planned by Denver Co-operative League

House of Semi-Spanish Architectural Style Fitted With Over 100 Outlets to Be Erected as Model and Ultimately Sold for a Home — Contractor-Dealers Work for Improved Mutual Relations

Denver's first electrical home is a reality. Through the efforts of the Electrical Co-operative League in that city a desirable boulevard building site was secured and construction of the house was started early in September. It is planned to have the house completed and furnished so as to be ready for exhibition about Thanksgiving time. "Putting over" the electrical home in Denver was not so easy as in some other cities, according to reports. Because of there being little subdivision or special-addition development no satisfactory opportunities to tie in with real estate or building firms developed. Rather than be dependent on outside agencies the Electrical Co-operative League organized its own company and incorporated for $25,000—all capital stock. The cash necessary to finance immediate developments was subscribed by members at the rate of $10 per share.

Firms handling all types of building material seemed to think so well of the proposition that arrangements were made by the building committee to issue stock in payment for the material, the stock to be converted into cash when the house is sold. Already numerous inquiries are being made, according to the committee, by people who are interested as prospective purchasers of the home.

The incorporators of "The Electrical Home Building Co.," as it is called, are W. J. Barker, general manager of the Denver Gas and Electric Light Co.; H. D. Randall, district manager of the General Electric Co.; and L. M. Cargo, manager of the Westinghouse Electric & Manufacturing Co. in Denver. They serve as president and vice-presidents, respectively, in the order of the names. S. W. Bishop, executive manager of the League, was elected secretary and treasurer of the corporation. The directors of the company appointed a building committee which will supervise the construction and equipping of the home. T. O. Kennedy, general superintendent of the Denver central station, and chairman of the League advisory committee, heads the building committee and is assisted by E. C. Headrick of the contractor-dealers' association and A. C. Cornell of the Western Electric Co. They secured the services of E. P. Varian, a prominent Denver architect, who had made a careful study of the electrical homes in California. The idea did not have to be sold to his firm, with the result that a full 2-story house of semi-Spanish architecture with over 100 outlets will be developed in his plans.

There will be seven rooms in the house which will have as an unusual feature a variegated

colored roof of tile and a tinted stucco wall surface. Mr. Varian, the architect, and his son, who was for a number of years a student in the Ecole des Beaux Arts in Paris, are thoroughly acquainted with Spanish architecture as modified by the mission influence in this country. The front elevation of the house shows the artistry used in designing the door yard and window balconies. Terracotta will be used as the base of the exterior ornamentation.

Those who have inspected the site report the location an admirable one. It is situated about 2.5 mi. from the business district on the Seventh avenue parkway, which is one of the main connecting links in Denver's boulevard system. That section of the city has mainly new homes of a quality in keeping with the "Electrical Home."

The co-operative advertising campaign which will be carried on by the electrical industry will "tie in" with the advertising of the home as much as possible. The actual demonstration of equipment and appliances will, it is believed, then relate itself to the advertising message of "Make this an Electrical Christmas," which will be prominently emphasized throughout the campaign.

Recommendations of the League in Cleveland, in California, and in Salt Lake City have been applied by the Denver "live wires" in putting over the "Electrical Home." According to S. W. Bishop other homes will be started in different parts of Denver just as soon as the present home is ready to be exhibited.

Electrical interests in Colorado Springs, Col., are closely following the developments in Denver, and it is expected that an "Electrical Home" will be built in that city when the experience and assistance of the League in Denver can be given to the project. With the League extending its activity over the entire state next year plans are also being made for similar homes in other cities of the state.

Denver Contractor-Dealers Call in Assistance From National Organization.

To intensify the development of the Electrical Co-operative League in Denver, and at the same time place the contractor-dealers of the city on a more co-operative working basis, the League secured from the National Association of Electrical Contractors and Dealers the services of its special representative, Laurence W. Davis, for a month. Mr. Davis has completed his tour of duty, and because of his success in Denver the Co-operative League in Salt Lake City secured his services for a week. His work there was to report on a small scale the program which was carried out in Denver.

Reports from Denver indicate that Mr. Davis spent a strenuous month with meetings of the League and of the contractor-dealers' association. Immediately upon his arrival a big get-together meeting was held at which Mr. Davis was the only speaker. He outlined plans for development of the co-operative work, and, according to T. O. Kennedy, chairman of the League's advisory committee, results are already being realized. Both general and division meetings were addressed by Mr. Davis, and as a result of a conference held by the appliance division a code of ethics for the merchandising of electrical equipment and appliances was promulgated and later ratified by the entire association.

Throughout his stay in Denver Mr. Davis worked for the betterment of merchandising methods, especially as to salesmanship, advertising, and displays in store windows, and definite campaigns for the improvement within their own shops were undertaken by a number of merchants. One of the high class appliance stores has changed the layout of the store and made contracts for redecorating and changing the front display windows in so far as the architecture of the building would permit.

How to properly estimate jobs and figure "overhead" and "turnover" was explained to the dealers whenever the occasion permitted, whether it was at a meeting or in the shop or store of one of the members. The books of eight firms were analyzed and the result showed that a number of the dealers and contractors were putting down figures which meant little in the final conduct of the business. Correction of these errors with advice as to the conduct of a proper system was made by Mr. Davis wherever the dealer would accept such assistance.

The last big meeting, held Aug. 30, was attended by over 100 representatives of the four branches of the industry in Denver. It was at that meeting that the extensive co-operative advertising campaign was announced. A quota of $5000 was subscribed and immediate arrangements were made to lay out the campaign in the Denver newspapers. Mr. Davis recommended an appropriation of 2% of the gross business done during the year for advertising purposes, 0.25% to be applied on the co-operative campaign, and the balance to be used in a logical manner which would "tie-in" with the big campaign. Judging from remarks of League members in Denver, Mr. Davis' engagement is considered an excellent investment. A number of dealers have stated that only through vision and experience could the situation be defined and analyzed so rapidly.

ELECTRIC BOARD FORMED IN THE MALAY STATES.

The director of public works, the general manager of railways, and the senior warden of mines have been appointed to constitute a board for the supervision of all schemes for electric lighting and electric supply throughout the Federated Malay States, according to a recent statement. *Eastern Engineering* announces that generating stations are to be formed near Taiping, Ipoh, Serembar, and Kuala Lumpur. Each town is to have its own station, but will be connected with Kuala Lumpur for emergency. J. C. M. Matthews, electrical engineer, Selangor, is secretary to the board.

The Wireless Co., handling messages between San Francisco and the Hawaiian Islands, Guam, the Philippines and Japan, has completed the installation of the latest type of alternators in all of its Pacific stations. Better service than before can now be rendered. A great number of messages can be handled by reason of the improved apparatus.

EDITORIAL COMMENT

For an Electrical Christmas

With the Christmas season only a few weeks away electrical manufacturers are again inaugurating elaborate campaigns for the sale of electrical devices suitable as gifts, with the idea of improving, if possible, upon the excellent record made last year, even with the adverse conditions now prevailing.

Manufacturers, central stations and contractor-dealers can derive benefit from this activity by doing their part in focusing public attention on electrical merchandise. Central stations have in previous years obtained excellent results by attaching suitable advertisements to monthly bills; while newspaper space, timely window displays and literature which can be obtained from the manufacturers are productive of increased holiday business. Contractor-dealers can benefit just as much by adopting progressive methods. Even if good window displays are provided throughout the year, surely a change may be made for the Christmas season. It is well to replace fans with electrical toys, cooking devices, portable lamps, etc., and don't forget that washing machines, vacuum cleaners and such devices are very acceptable gifts to many an overworked housewife. But dress up the display with some holiday suggestion. Increased business can also be obtained from the sale and installation of electrical Christmas-tree outfits which are so superior to candles from the standpoint of fire hazard.

If manufacturers, central stations and contractor-dealers will unite in a co-operative movement to stimulate the sale of electrical goods there is no reason why the electrical industry cannot receive its share of the business which the holiday season brings.

A Live Tip for a Live Dealer

Waiting on the building boom has become a chronic habit with many contractor-dealers as well as with the building industry as a whole. The time to wait has gone by, and it is now time for action; in fact, there never was a time for anything but action with all the opportunities that have existed. Chas. L. Benjamin advises the contractor-dealer to go after fixture renewal business, and he tells how to find it. "Watch for real estate news, and see every man who buys a home." Such in substance is his advice.

There have been many thousands of houses change hands during the last year—there is hardly a community anywhere in the country in which there will not be other transfers in the next month. When a man buys a house that has been built for 10 yrs. or more there is probably no other fitting or equipment on the property so far out of date as the lighting fixtures. In most cases the new owner gives his property a thorough cleaning out and a new coat of paint and paper, and then those old fixtures look even less appropriate than before. Fixture design has been so changed during the last 10 yrs., as a result of the passing of gas illumination and the progress in lamp manufacture, that no family can move from a fairly modern apartment into a house with old time fixtures without feeling a strong desire for a change.

The dealer who is alive to the situation will follow every real estate transfer in his territory and take advantage of the opportunity to "refixture" while the time is ripe. A building boom, or a business boom, or a gold or oil boom never developed by itself. Someone with red blood in his veins has gone out to start every building, business or oil boom, and the boom was never started by complaining about lack of opportunity. The renewal fixture boom can be put on its feet, and with it will develop a boom in wiring and appliance business. Now is the time for action. The day of delay will be no more productive of results than is the water productive of power after going through the wheel.

Substitutions for Standard Construction

As a rule the inventive faculty is something to be greatly desired, and those whom nature has favored with this rather rare gift should be encouraged to make the most of it. It is extremely unfortunate, however, that men who attempt to invent things or to discover new ways of doing some piece of work do not always first make sure that the object they seek to accomplish has not already been accomplished in an entirely satisfactory manner. Failure to take this precaution has many a time resulted in keen disappointment and a deplorable waste of time and money. One sees much of this sort of thing in the electrical field and, judging from the frequent crude substitutes for standard practice in wiring which one finds, it appears that some electric wiremen are especially guilty of the omission referred to.

No well informed electrician would for a

moment contend that improvements cannot be made in the methods of electrical construction now considered standard, nor that the line of approved wiring supplies and fittings on the market is perfect and complete. It is not meant to convey any such impression here, but merely to emphasize the necessity of the most complete familiarity with standard electrical fittings and construction methods on the part of men engaged in electrical construction, and to insist that nine times out of ten efforts to make substitutions for these, whether such efforts be due to ignorance or be inspired by a desire to try new ways of doing things, result in a relatively low grade of construction. To cite an example or two: Some combinations of hooks and cleats for holding a conduit on a wall or ceiling may be delightfully ingenious, but manufacturers are selling expansion bolts or screws that fulfill the desired purpose far better; a lamp socket and a plug may do for a pendent switch, but this is a very poor substitute for the regular fitting, and this kind of construction should have been abandoned finally when electric lighting passed the experimental stage.

By the free use of available literature on the subject as a supplement to his practical everyday experience every electric wireman ought to endeavor to keep himself well informed as to the developments in standard fittings and the correct use of these. Moreover, he can well afford to insist that such fittings be used instead of makeshifts, however ingenious the latter may seem to be. It is one of the best ways of avoiding trouble with the inspector, of doing really high-class work, and of improving his reputation as an electrician.

Grounding of Portable Devices

It is generally recognized to be good practice to ground metal cases and such other conducting parts of electrical equipment as are not intended to carry current. If through the development of a fault in the insulation, or any other contingency, such metal parts become electrically connected to the current-carrying parts there is then no danger of a person receiving a shock, since the parts are definitely maintained at ground potential. Should the development of such a fault result on a grounded circuit, in grounding the second side of the circuit it will result in blowing a fuse and thus interrupting service until the fault is remedied. This has been thought by some to be sufficient disadvantage in the case of lighting fixtures to warrant insulating the fixture rather than grounding it, but this viewpoint has been rapidly passing. New York City discarded the insulating joint in fixtures years ago, and recently Chicago has done likewise. It is realized that if fixtures are properly wired the safest condition is to have them grounded.

The grounding of motor frames and similar stationary parts is a simple matter and should be carried out regardless of the voltage of the circuit, although the national codes do not make it mandatory in all cases. There may be particular cases where some operating consideration would dictate otherwise, as often happens with instruments connected on high-voltage circuits or to instrument transformers, but such circumstances are exceptional. In general, the conditions will call for grounding.

When portable current-consuming devices are considered the reasons for grounding remain in full force and may even be strengthened by the fact that such devices are much handled. If used where floors are wet or otherwise conducting, as in laundries or in shops with metal floors, or where grounded objects are near, such as the plumbing in bath rooms, there is especial need for grounding. Yet with portable devices it is not always easy to carry out grounding.

Three-conductor flexible cord is generally available for this purpose, and the third wire can be connected to the frame or case of the device to provide a ground connection. The difficulty manifests itself at the receptacle or other form of outlet at which the flexible cord is to be connected to the circuit. Provision for the ground connection has not usually been made. With a 3-pole plug and receptacle it can easily be done, but it is essential that the plug and receptacle be polarized so that a wrong connection cannot be made.

The provision of suitable receptacles and plugs seems to be a problem for the manufacturer, the contractor and the inventor. Available material will meet the necessities if installed, but perhaps the inventor and manufacturer can devise something new which will be more flexible and adaptable for use both with and without the ground connection. In the meantime the contractor should use his efforts to provide the proper facilities for portable devices without waiting for such requirements to be made mandatory in the municipal or national rules.

Abusing the Electric Range

Well designed and carefully built electrical apparatus for domestic service is noted everywhere for its ability to withstand hard conditions of operation, and some marvelous records have been made along this line within recent years. At the same time it is important for central stations, contractor-dealers and others interested in the use of electricity in intensely practical spheres like the kitchen and the shop to see to it that equipment is not abused through the ignorance of the operator. Continuous, efficient and re-

liable service depend, somewhat unjustly perhaps, in the mind of the layman upon the performance of individual apparatus for which the energy-supply company may not be directly responsible, and for this reason the policy of assisting the consumer to get the best possible duty out of his equipment, even at some actual money cost to the dealer or power company, is one of the best ever inaugurated in the industry.

Perhaps no class of electrical equipment responds more quickly to decent treatment than heating apparatus, and what applies to the electric range is in a measure typical. Some of the abuses of ranges of the latest type, which have tended to interfere with their best success, are well worth pointing out. Say that the range in question is equipped with a thermostat which cuts off the supply of current when the heat in the ovens has reached a temperature predetermined by the setting of a dial, the latter being graduated and used with reference to cooking rquirements. The tendency of some hotel or restaurant employes is to set the dial hands at points beyond those indicated as necessary for stated kinds of cooking, with the result that energy is used extravagantly and the life of the heating elements shortened. Similar results follow the practice of leaving the switches closed to heaters on top of the stove when these are not in use. The practice of washing the heating elements in a bath of water instead of going over them with a damp cloth is also objectionable, and the neglect of the tops of heaters to the point where rust and dirt accumulate simply invites loss of heat through poor contact and consequent excessive consumption of energy for a given duty.

Other mistakes include the use of cooking utensils without flat bottoms, the placing of heat shields in ovens with the front sides at the rear, the plugging in of heaters of the wrong size at receptacles designed for different units, and the use of dishes in ovens which touch the sides and back, thereby cutting off the proper circulation of heated air.

All such points and others should be covered by directions or "warnings" placed in the hands of users by merchandisers of electric ranges; and, where the sales territory is sufficiently restricted to permit an occasional personal visit from some one in the merchandiser's establishment, such service will be found to pay handsomely in the long run.

The Value of Agreeableness

The electrical contractor's skill in selecting the right sort of men for his construction force plays a far more important part in determining the success of his business than is generally recognized. In a certain neighborhood where most of the electrical work consisted in wiring residences already completed and occupied two contractors undertook to establish themselves in business. One of these men thought that an electrician's value to his employer was measured mainly by the amount of work per day which he could be depended upon to install, and he gave himself little concern as to how much of a nuisance employes of his might allow themselves to become to the people in residences where they were sent to install wiring. His competitor, on the other hand, was especially careful to send out on jobs of the kind mentioned only workmen who he felt sure would try to make themselves reasonably accommodating and unobjectionable to the family for whom the work was being done. The first of these two contractors is wondering now why his competitor's business has grown so much faster than his own.

It would be foolish, of course, to insist that an electrician should have either all the polish of a Chesterfield, or the patience of Job, but a disposition to be pleasant and accommodating is always a very valuable personal asset. It is one which the contractor who employs men can well afford to take into account and pay for.

Depending on Employes

A contractor is very much in the hands of his workmen, and unless he is in a position to employ foremen upon whom he can rely with confidence he cannot be certain that the work done by his men will not be "scamped" now and again. Unfortunately, an incompetent wireman may do a great deal of damage to the reputation of his employer before being found out, and it is little satisfaction to discharge the man since this does nothing towards removing the bad impression formed of the contractor's integrity and ability by his clients. So much of a contractor's business, however, consists of detail work and small jobs which do not justify the employment of a foreman that the wireman is usually entrusted with the work in the belief that he will carry it out satisfactorily. A customer will not usually grumble until something serious happens, and will often put up with faulty work sooner than lodge a complaint; but the contractor loses his client's confidence and often his further orders.

Workmen who are competent as well as reliable and interested in the employer's business are rare indeed. When such a man is once found and taken into an organization it is well to retain him, even through severe periods of restricted work. Such continued employment should work ultimately to the good of the contractor as well as to that of the individual workman concerned.

MATTHEW S. SLOAN

President, Association of Edison Illuminating Companies

THE WEEK'S NEWS

Reports of Important Meetings, Developments and Other Happenings of the Electrical Industry and Its Allied Interests

SLOAN ELECTED HEAD OF EDISON ILLUMINATING COMPANIES.

Officers Named at Concluding Session of Annual Meeting of Association Held at Spring Lake Beach, N. J., Last Week.

At the closing session of the 36th annual meeting (the 40th convention) of the Association of Edison Illuminating Companies held at Spring Lake Beach, N. J., Sept. 12-15, the names of the officers elected were announced, headed by Matthew S. Sloan, president, Brooklyn Edison Co., Brooklyn, N. Y.

Mr. Sloan is a graduate of the Alabama Polytechnic Institute, Auburn, Ala., and holds the degrees of B. S. M. S. and E. E. Beginning in 1906 he was for 7 yrs. employed by the Birmingham (Ala.) Railway, Light & Power Co., during which time he rose from chief engineer to assistant to the president, having supervision over all departments. In 1913 he left Birmingham and became vice-president and general manager of the New Orleans (La.) Railway & Light Co. In the latter part of 1917 he became operating manager of the New York Edison Co., and on Aug. 1, 1919, was elected president of the Brooklyn Edison Co., of which he is also a director. Mr. Sloan is president and a director of the Amsterdam (N. Y.) Electric Light, Heat & Power Co., a director of the Peoples Trust Co. of Brooklyn and treasurer of the Electrical Testing Laboratories.

Mr. Sloan is chairman of the Committee on Electrical Resources of the Nation, and chairman of the Relations with Bankers Committee of the Public Relations Section of the National Electric Light Association. He is also chairman of the Jamaica Bay and Inland Waterways Committee of the Brooklyn Chamber of Commerce; chairman of the board of directors of the National Association of Corporation Training; a member of the board of trustees of the Polytechnic Institute of Brooklyn, and a member of the American Institute of Electrical Engineers, New York Electrical Society, Academy of Political Science, Merchants' Association of New York, Chamber of Commerce of the United States and the New York Southern Society. Mr. Sloan is also a member of the Bankers Club of America, Brooklyn Club, Crescent Athletic Club, Engineers Club, Engineers Country Club and the Hamilton Club of Brooklyn.

The newly-elected president of the Edison Illuminating Companies is a man of fine presence and executive ability, and will be sure to add to the prestige of the Edison Association and advance its interests.

In addition to Mr. Sloan the following officers were elected: Vice-president, John F. Gilchrist, vice-president, Commonwealth Edison Co., Chicago; treasurer, W. H. Atkins, Edison Electric Illuminating Co. of Boston; secretary, Preston S. Millar, president, Electrical Testing Laboratories, New York City; executive committee, Matthew S. Sloan, chairman, Brooklyn, N. Y.; Charles L. Edgar, Boston; W. W. Freeman, Cincinnati; Samuel Insull, Chicago; John W. Lieb, New York City; Joseph B. McCall, Philadelphia; John F. Gilchrist, Chicago; Preston S. Millar, New York City, and W. H. Atkins, Boston.

The report of the Committee on Resolutions, which was adopted, expressed thanks to Mr. Edison for spending a day at the convention; thanked the General Electric Co. for the special film showing Mr. Edison at work in his laboratory and visiting his lamp factory at Harrison, N. J., and also thanked the Westinghouse Electric & Manufacturing Co. for its interesting demonstration of wireless telephony. A resolution expressing regret over the absence, through family illness, of Charles L. Edgar, president, Edison Electric Illuminating Co. of Boston, and one of the organizers of the Association, was adopted.

Mr. Sloan, the new president, accepted his responsible office in a few words of promise for the future that were enthusiastically applauded.

A number of prizes were awarded to the ladies for golf and croquet victories, Mr. Freeman acting as spokesman and Frank H. Gale, of the General Electric Co., distributing the many handsome and serviceable gifts. R. H. Tillman, of Baltimore, won the president's golf cup, the presentation being made by H. D. Gay.

The convention was considered one of the most successful ever held by the Association and much credit is due the retiring president, Walter H. Johnson, of the Philadelphia Electric Co., for the great interest displayed, the splendid program and the large attendance. The various meetings were well attended and the discussions were very animated and instructive.

ADDITIONS AND CHANGES MADE TO I. E. S. PROGRAM.

Properties and Limitations of Optical Material and Departures From Usual Methods in Lighting Public Places to Be Discussed.

Since the tentative program prepared for the 15th annual convention of the Illuminating Engineering Society, to be held at Rochester, N. Y., Sept. 26-29, was printed on p. 283 of the Aug. 20, 1921, issue of ELECTRICAL REVIEW, various changes and additions noted below have been made:

Monday, Sept. 26, 2:15 *p. m.*—Following the report of Council by Clarence L. Law, F. E. Cady, chairman of the Committee on Progress, will submit his report entitled "A Year's Progress in Lighting and Illumination," and Edward P. Hyde will speak on the Paris meeting of the International Commission on Illumination.

Tuesday, Sept. 27, 9:30 *a. m.*—Following the paper

on "Eye Fatigue in Industry" by Max Poser, W. B. Rayton will submit a paper on "Some Properties and Limitations of Optical Material."

Wednesday, Sept. 28, 9:15 *a. m.*—The session will be opened by the presentation of a paper on the "Present Status of Automobile Headlighting Regulations," by C. H. Sharp, chairman, Committee on Motor Vehicle Lighting.

Thursday, Sept. 29, 9:15 *a. m.*—The subject of W. L. Goodwin's talk will be "Merchandising Illumination."

Thursday, Sept. 29, 2:15 *p. m.*—Papers on "The Lighting of Public Buildings" by A. L. Powell and E. Parker; "Recent Departures From the Usual Methods in Lighting Public Places and Offices" by A. D. Curtis and J. L. Stair; "The Lighting of Clothing Factories" by A. B. Oday and R. W. Peden; closing formalities and induction of President-elect Dr. George S. Crampton, Philadelphia.

USE OF POWER STUDIED BY STEEL ELECTRICAL ENGINEERS.

Generation of Steam by Coal, Gas, Oil, Tar and Waste Heat Is Given Attention—Electrical Energy in Steel Mill Practice.

Utilization and generation of power were features of the papers and discussions at the various sessions of the 15th annual convention of the Association of Iron and Steel Electrical Engineers, held Sept. 19-24 in Chicago. A paper by M. C. Spencer, designing engineer, Crocker-Wheeler Co., entitled "Some Recent Developments in Induction Motor Starting," brought out important points of interest to motor users. It was stated that accessibility of parts, simplicity and interchangeability are features of new designs. Temperature-operated devices are being developed to replace mechanical time-limit overload devices.

The advantages and difficulties of yard electrification, as applied to railroad equipment about the mills, was covered in a paper by R. B. Gerhardt of the Bethlehem Steel Co. Figures presented by Mr. Gerhardt indicated a net return on investment, resulting from electrification of such equipment, of 16.9%. Difficulties in maintaining crossings and in the operation of electric locomotive cranes about the yards were pointed out in discussions following the paper.

A. M. MacCutcheon, chief designing engineer, Reliance Electric & Engineering Co., presented a paper dealing with anti-friction bearings. He described interesting problems of manufacture, selection and use of various bearings. The conclusions drawn indicate that Mr. MacCutcheon is convinced that anti-friction bearings are suitable for wide application.

The varied fuel demands and conditions applicable to steel mill practice were covered in a paper by F. E. Leahy, fuel and experimental engineer, Carnegie Steel Co. W. N. Flanagan, steam engineer, Carnegie Steel Co., presented a paper on "The Control of Boiler Operation." He described a method of operating a whole boiler room as a single unit, regulating the fuel and air supply in accordance with the load. Automatic devices were described that are capable of relieving the boiler operators of much detailed work and at the same time securing much improved boiler performance. Discussion was participated in by Joseph Harrington, O. A. St. Clair, W. H. Fitch, J. M. Spitzglass and others who discussed the boiler control and combustion problems from various angles.

Other papers covered subjects of interest chiefly to the iron and steel engineers. Among these were papers by E. A. W. Jefferies, G. R. McDermott, E. T. Moore, L. F. Galbraith, Walter Greenwood, F. W. Cramer, D. M. Petty, and H. L. Kirschberg.

A. E. S. WILL DISCUSS ELECTRIC FURNACE PROBLEMS.

The 40th general meeting, marking the end of the second decade since the organization of the American Electrochemical Society, will take place at the Lake Placid Club, N. Y., Sept. 29-Oct. 1. The technical program will be featured by two symposia on nonferrous metallurgy and electrodeposition.

Some of the important papers to be presented are: "The Influence of the Electric Furnace on the Metallurgy of Nonferrous Metals" by H. M. St. John; "Resistance Type of Electric Furnace in the Melting of Brass and Other Nonferrous Metals" by T. F. Baily; "Comparison of Electric Furnace Practice With That of Fuel-fired Furnace Practice" by N. K. B. Patch; "Electric Silver Melting" by H. A. DeFries; "Electric Furnace Melting of Nickel-silver" by F. C. Thompson; "Recent Developments in Electric Furnaces of the Muffled Arc Type" by H. A. Winne; "Electric Furnace Purification of Zirkite" by J. C. Thompson, and "Electric Steam-Generator for Low Voltage" by F. A. Lidbury and F. A. Stampe.

JOINT MEETING OF COLORADO AND N. E. L. A. ORGANIZATIONS.

Financial Outlook for Public Utility Companies and Building Business Through Co-operative Effort Among Subjects Discussed.

The 18th annual convention of the Colorado Electric Light, Power and Railway Association held jointly with the Rocky Mountain Geographic Division of the National Electric Light Association at the Hotel Colorado, Glenwood Springs, Colo., Sept. 19-21, was featured by the following addresses: "Modern Views of the Need for Light as Developed From Discoveries of Recent Years" by S. E. Doane, chief engineer, National Lamp Works of General Electric Co., Cleveland; "The Financial Outlook for Public Utility Companies" by H. C. Abell, treasurer, National Electric Light Association; "The National Financial Situation" by Frank N. Briggs, president, Interstate Trust Co., Denver; "The Present-Day Trend of Utility Regulation" by G. E. Halderman, chairman, Public Utilities Commission of Colorado; "Get What Is Coming to You" by F. O. Hamilton, rate expert, Henry L. Doherty & Co., New York City; "How to Reverse Radical Sentiment" by Fred R. Marvin, Denver; "Building Business Through Co-operative Effort" by S. W. Bishop, executive manager, Electrical Co-operative League, Denver, and "Latest Developments in Street Lighting Equipment" by L. A. S. Wood, George Cutter Works of the Westinghouse Electric & Manufacturing Co., South Bend, Ind.

Addresses were also delivered by M. R. Bump, president, National Electric Light Association,

covering the activities of that organization; M. H. Aylesworth, executive manager, National Electric Light Association, on "What the Association Is Accomplishing Through Committees on Public Utility Information"; E. J. Fowler, chairman, National Accounting Section, National Electric Light Association, on "Activities of the Accounting Section, N. E. L. A."; W. J. Meyers, chairman, Classification of Accounts Committee, National Electric Light Association, on "N. E. L. A. and Federal Power Commission Classification of Accounts," and R. C. Newbury, chairman, Educational Committee, Rocky Mountain Section, National Electric Light Association, on "Educational Courses Offered by the National Electric Light Association."

ELECTRICAL CO-OPERATIVE LEAGUE ADOPTS CODE OF ETHICS.

Denver Organization Launches Extensive Co-operative Advertising Campaign—National Association Representative Addresses Members.

The launching of an extensive co-operative advertising campaign and the adoption of a code of ethics in the merchandising of electrical equipment were the features of a "roundup" arranged by the Electrical Co-operative League in Denver last month. The dinner and meeting which were held at the Albany hotel, served as a farewell party for Laurence W. Davis, of the National Association of Electrical Contractors and Dealers, who spent the month of August in Denver under the League's auspices.

Over 100 members of the electrical industry in Denver attended the meeting. They enthusiastically offered their support to the campaign and according to latest reports, the original quota of $5000 has been oversubscribed. The proportions allocated to the various divisions were as follows: Contractor-dealers $2000; central station $2000; jobbers and manufacturers $1000.

Mr. Davis in his talk recommended to the contractor-dealers an appropriation of at least 2% of their annual gross business, one-half of 1% to be devoted to the co-operative campaign in the Denver newspapers. A. C. Cornell, local manager of the Western Electric Co. and chairman of the League's publicity committee, outlined the plans of the campaign. He is now working with the biggest advertising agency in Denver, preparing the copy for the first advertisement which will appear in October.

With the definite announcement of the details concerning the erection of the first electrical home in Denver, it is planned that the campaign will tie-in with the house advertising in such a way that the big objective will be, as announced at the meeting, "Make This An Electrical Christmas." The adoption of a code for the guidance of Denver contractor-dealers along ethical lines was unanimous. This code had already been accepted by the appliance division of the Association, according to its chairman, J. W. Van Dyke.

A number of dealers expressed their desire at the meeting to have the code given the widest publicity and the League, according to its executive manager, S. W. Bishop, is having the code printed for prominent display in the stores of all members of the Association. The August meetings were so satisfactory, it was announced by T. O. Kennedy, chairman of the League's advisory committee, that regular monthly meetings of a similar nature will be held throughout the fall and winter.

CODE OF ETHICS ADOPTED BY ELECTRICAL CO-OPERATIVE LEAGUE OF DENVER.

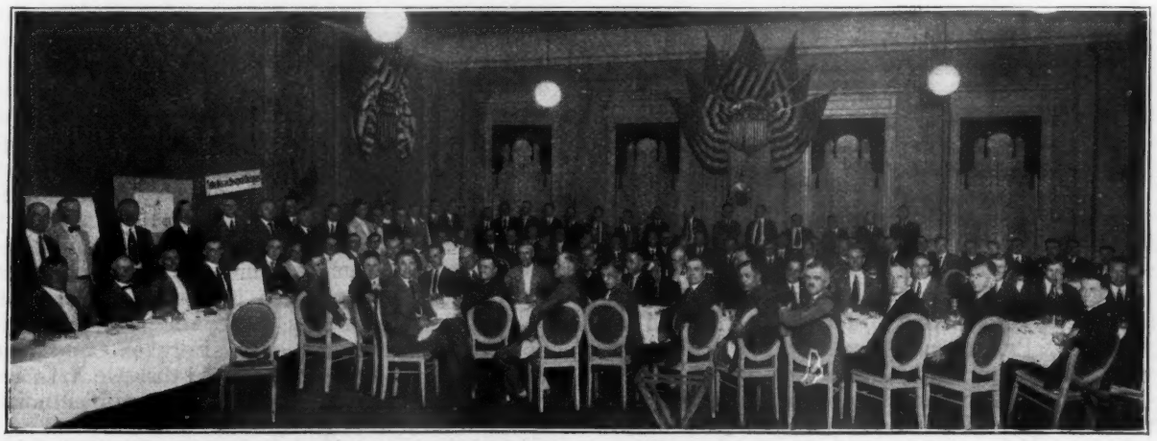
1. Members of the Association shall regard themselves as being engaged in a business in which there is a well-defined duty and obligation toward the public, the electrical industry and themselves. The business demands that members use every honorable means to uphold the dignity and honor of this vocation, to exalt its standards and to extend its spirit of usefulness.

2. Members of this Association shall recognize that the co-operative efforts of such an agency as the Electrical Co-operative League in all of its activities, designed to raise the standard of their industry through education of the public and the development of better service, will unquestionably benefit the appliance sales business and should have the active and constant support of each individual member.

3. Members of this Association should not falsely or maliciously injure directly or indirectly the business reputation, prospects or business of a fellow member of this Association.

4. Members of this Association should not attempt to supplant a fellow member after definite steps have been taken by him toward the completion of a sale.

5. Members of this Association should recognize that the competitive demonstration of two or more similar appliances in a home at the same time causes a wasteful burden of expense upon the public, the in-



Members of the Electrical Industry in Attendance at the Recent "Roundup" Arranged by the Electrical Co-operative League of Denver.

dustry and the dealer, and every effort should be made to avoid it.

6. Believing that electrical appliances have been so developed today as to have established their value beyond the experimental or introductory stage, and recognizing that all so-called "free trials" in the homes, covering more than a simple demonstration of such light appliances as a house canvasser may carry, are expensive and entail a wasteful burden of cost on the public, members of this Association should discourage the public from asking for such "free trials" and should adopt such order forms to be signed by prospective customers as will encourage only bona-fide purchasers, to the end that the practice of "free trials" may be discontinued.

7. Members of this Association believe that "price cutting" and discounts under the list or recognized prices are undesirable and should be used only as a last resort to move dead stock, and they should make every effort to prevent any unavoidable special sale from injuring the business of fellow members.

8. Members of this Association disapprove the extension of time payments on appliance sales beyond 12 mo.; believe that first payments on appliance sales should be as large or larger than subsequent payments; and believe that all time payments should have a carrying charge added to the cash price sufficient to cover interest charges and cost of collections.

9. Members of this Association should adopt uniform price tags with all prices in plain figures.

10. Whenever disputes or differences arise between members, it should be the duty of the parties to the controversy to submit the trouble to an arbitration of two disinterested members of this Association, and in the event of a failure to arrive at satisfactory settlement then, upon request, that committee shall select a third member of the committee from the Electrical Co-operative League and outside of the retail appliance business.

DISCUSS CONSUMER OWNERSHIP OF UTILITIES.

At the first annual meeting of the Great Lakes Geographic Division of the National Electric Light Association, held jointly with the Indiana Electric Light Association at French Lick Springs, Ind., Sept. 21-23, the program was carried out substantially as printed on p. 407 of the Sept. 10 issue of ELECTRICAL REVIEW.

Among the principal speakers were Milan R. Bump and M. H. Aylesworth, president and executive manager respectively of the National Electric Light Association; B. J. Mullaney, director of the Illinois Committee on Public Utility Information, who spoke on the work and future plans of that organization; Fred R. Jenkins, chairman, Educational Committee, National Electric Light Association, who gave an address on "Training for Public Service"; F. H. Scheel, Chicago, on "Consumer Ownership of Utilities"; George P. Barnard, commissioner, Indiana Public Service Commission, on "Public Service"; and J. B. Wootan, New York City, on "Central Station Publicity."

A more detailed report of the proceedings will appear in an early issue of ELECTRICAL REVIEW.

NEW OFFICERS OF PENNSYLVANIA ASSOCIATION.

At the 14th annual convention of the Pennsylvania Electric Association held at Bedford Springs, Pa., recently, mention of which was made on p. 439 of the Sept. 17, 1921, issue of ELECTRICAL REVIEW, the following officers were elected: President, A. H. S. Cantlin, Allentown, Pa.; first vice-president, H. H. Ganser, Norristown, Pa.; second vice-president, E. H. Davis, Williamsport, Pa.; treasurer, J. H. Shearer, Altoona, Pa., and secretary, Henry M. Stine, 211 Locust street, Harrisburg, Pa.

Secretary Stine reports that the feature of the meeting was the large number of central station representatives in attendance and the splendid papers presented. The attendance numbered 450.

QUARTERLY MEETING OF EASTERN JOBBERS POSTPONED.

Owing to the inability of many members of the Atlantic Division of the Electrical Supply Jobbers' Association to attend the regular quarterly meeting scheduled to be held at the Bellevue-Stratford hotel, Philadelphia, last Thursday, George L. Patterson, division chairman, ordered a postponement until Thursday, Oct. 20.

A. J. BATES FINDS A GOOD FOREIGN MARKET FOR STEEL POLES.

Trip Around World Reveals Strong Position of Utility Properties as Result of Public Appreciation of Service.

Letters received from A. J. Bates, general manager, Bates Expanded Steel Truss Co., Chicago, now on a trip around the world, indicate the strong position held by the electrical industry. Mr. Bates' observations are covered in part in the following quotation:

"The business situation in all foreign countries is practically the same as that in the United States, with the possible exception of the electrical industries. The foreigners seem to realize more than do the Americans the fact that the electrical industries and public utilities are a necessity and must be supported by the public, and that practically all power must be transmitted electrically in order to be economically furnished. With these various things in mind the public has encouraged the public utilities of their various cities to such an extent that they are able to operate so that when general business conditions return to normal the public utilities, which are a necessity to all industries, will be in proper condition both financially and physically to supply the necessary requirements of various industries as to power, transportation, etc."

In connection with Mr. Bates' trip it is interesting to note that he has already called on the leading electrical industries of Japan, China, Philippine Islands and Australia. In each of these countries he delivered lectures at numerous centrally located points for the benefit of the engineers of the industries and of the government. It is a peculiar thing, he says, that practically all of the leading engineers of these various countries speak and understand English very well, and this, in addition to his graphic methods of illustrating, enabled him to explain the idea of the equipment which he had to talk about. The Bates people say, "We are pleased to advise that he has so successfully explained the merits of the 1-piece steel pole that we have received and shipped large orders to various industries in these foreign countries."

Mr. Bates also reports that the financial situation in these various countries is easing mate-

rially, as money is becoming cheaper and more plentiful. Probably the most outstanding feature of the trip is the fact that large orders are being taken in competition with the locally manufactured poles.

An official of the company in Chicago says: "Mr. Bates has, naturally, as the result of his experience, talks and orders he has received, become very optimistic over the foreign trade and believes that the United States will quickly follow, in so far as public utilities are concerned, and show the same amount of life that he is finding in these foreign countries."

REVIEW OF BUILDING OPERATIONS IN AUGUST.

Building Contracts in Central West Showed Increase of 3% Over July Figures—Northwest Contracts for August Decreased 25%.

Construction activity in August, according to figures published by the F. W. Dodge Co., was 4% greater than in July and 9% greater than in August, 1920. Contracts awarded during August, 1921, in the 27 northeastern states of the country amounted to $220,972,000. Residential construction continues in the lead over all other classes of buildings. It accounted for 36% of the total in August, amounting to $80,329,000. Public works and utilities amounted to $44,797,000, or 20% of the total; business buildings, to $35,526,000, or 16%; educational buildings to $27,959,000, or 13%; and industrial buildings to $10,832,000, or 5%. Contracts awarded for mercantile buildings in August amounted to more than for any previous month of this year.

The total volume of contracts let in the territory covered by the F. W. Dodge Co. during the first 8 mo. of this year has been 10% greater than the average for the first 8 mo. of the preceding 5 yrs. Contemplated new work reported from Jan. 1 to Sept. 1, 1921, has amounted to $3,202,731,000, which is more than double the amount of contracts awarded in the same period.

In the New England states August building contracts amounted to $20,560,000, which was practically the same as the July figure. Included in the August total were the following items: $7,075,000, or 34%, for residential buildings; $5,672,000, or 28%, for business buildings; $2,623,000, or 13%, for educational buildings; and $1,974,000, or 9%, for public works and utilities. Total construction contracts let in this district during the first 8 mo. of this year have amounted to $122,802,000, which is 19% less than the average for the first 8 mo. of the preceding 5 yrs. Contemplated new work reported in this district during August, 1921, amounted to $22,887,000.

Contracts awarded during August in New York state and northern New Jersey amounted to $61,010,000, an increase of 11% over July. The August total included: $35,689,000, or 58%, for residential buildings; $9,404,000, or 15%, for business buildings; $4,985,000, or 8%, for educational buildings; $3,101,000, or 5%, for public works and utilities. Total construction contracts let in this district during the first 8 mo. of this year have amounted to $358,239,000, which is 36% greater than the average for the first 8 mo. of the preceding 5 yrs. More than half of the total volume of construction in 1921 has been for residential building. Contemplated new work reported in this district in August amounted to $98,554,000, which was 32% greater than the amount of contemplated work reported in July.

August building contracts in the middle Atlantic states (comprising southern New Jersey, eastern Pennsylvania, Delaware, Maryland, the District of Columbia, Virginia and North and South Carolina) amounted to $37,913,000, an increase of 44%, over July. The August total was divided as follows: $11,693,000, or 31%, for public works and utilities; $11,044,000, or 29%, for residential buildings; $5,602,000, or 15%, for educational buildings; $5,522,000, or 14%, for business buildings. From Jan. 1 to Sept. 1, 1921, the total value of contracts awarded in this district has amounted to $224,269,000, which is 5% greater than the average for the first 8 mo. of the preceding 5 yrs. During August, 1921, contemplated new work was reported in this district to the amount of $51,320,000, bringing the total amount of contemplated work reported for the year up to $490,042,000, which is more than double the amount of contracts awarded during the same period.

August building contracts in western Pennsylvania, West Virginia, Ohio, Kentucky and Tennessee amounted to $32,899,000, a decrease of 24% from July. Included in the August total were: $9,493,000, or 29%, for residential buildings; $8,713,000, or 26%, for public works and utilities; $4,794,000, or 15%, for educational buildings; $4,342,000, or 13%, for business buildings. The total amount of contract awards in this district from Jan. 1 to Sept. 1, 1921, has amounted to $290,198,000, an increase of 23% over the average for the first 8 mo. of the preceding 5 yrs. In August, 1921, contemplated new work was reported in this district to the amount of $97,025,000, which was three times the amount of contracts awarded in the same month.

August building contracts in the Central West (comprising Illinois, Indiana, Iowa, Michigan, Wisconsin, Missouri and portions of eastern Kansas and Nebraska) amounted to $60,245,000, an increase of 3% over July. Included in the August total were the following items: $17,148,000, or 28%, for public works and utilities; $14,261,000, or 24%, for residential buildings; $9,787,000, or 16%, for business buildings; $9,016,000, or 15%, for educational buildings. During the first 8 mo. of this year contracts awarded in this district have amounted to $444,418,000, which is practically equal to the average for the first 8 mo. of the preceding 5 yrs. During August the amount of contemplated new work reported in this district amounted to $82,088,000, bringing the total amount of contemplated work reported this year up to $972,170,000, which is more than double the total amount of contracts awarded in the same period.

Contracts awarded in August in Minnesota and North and South Dakota amounted to $8,344,000, a decrease of 25% from July. Included in the August total were: $2,767,000, or 33%, for residential buildings, and $2,168,000, or 26%, for public works and utilities. Contracts awarded in this district during the first 8 mo. of this year

have amounted to $58,183,000, which is 33% greater than the average for the same period of the preceding 5 yrs. Contemplated new work reported in this district during August amounted to $11,770,000, bringing the total volume of contemplated work reported this year up to $143,985,000, which is nearly 2.5 times the amount of contracts awarded in the same period.

MASSACHUSETTS ASSOCIATION TO MEET NEXT WEEK.

The annual meeting of the Massachusetts State Association of Electrical Contractors and Dealers will be held Sept. 27 in Boston. The following prominent speakers are scheduled to address the delegates: William L. Goodwin, of the Society for Electrical Development, who will talk about the activities of the Society; Samuel Adams Chase, special representative, Westinghouse Electric & Manufacturing Co.; James R. Strong, chairman, National Association of Electrical Contractors and Dealers; E. W. Miner, president, Contract Purchase Corp., New York City, and J. W. Cowles, Edison Electric Illuminating Co. of Boston, who will talk about standardization of service switches.

ACTIVITIES OF INDUSTRIAL COST ASSOCIATION.

At a recent meeting of the board of directors of the Industrial Cost Association the resignation of J. W. Stannard as president and director was accepted, and Horace S. Peck, comptroller, S. K. F. Industries, Inc., 165 Broadway, New York City, was elected to fill the vacancy. Christopher Haigh, General Electric Co., West Lynn, Mass.; Joseph P. McLean, Pittsburgh Forge & Iron Co., Pittsburgh, and Ernest J. Wesson, W. T. Raleigh Co., Freeport, Ill., were elected directors.

It was decided to hold the fall conference at Pittsburgh, Nov. 2-4, details of which will be announced at a later date.

A. M. OF E. S. HAS RESUMED FALL ACTIVITIES.

With the passing of the summer season the various sections of the Associated Manufacturers of Electrical Supplies are planning their work for the ensuing year and the first meeting scheduled was that of the Radio Apparatus Section held Sept. 22 at the Association headquarters, 30 East 42nd street, New York City, when matters of extreme importance to the industry were considered.

The regular quarterly meeting of the Heating Appliance Section will take place on Wednesday morning, Oct. 5, at the general offices of the organization, and Wm. M. Stearns, chairman, announces that the plans of the many sectional committees will be discussed.

A. I. E. E. TO DISCUSS ELECTRIC AUXILIARIES AND PROPULSION.

The 372d meeting of the American Institute of Electrical Engineers will be held in the Engineering Societies building, 33 West 39th street, New York City, Nov. 17. The meeting will consist of an afternoon and an evening session. The afternoon session will be a joint meeting with the Society of Naval Architects and Marine Engineers, forming a part of the annual meeting of that Society.

Two papers will be presented at this session as follows: "Electric Auxiliaries" by E. D. Dickinson, marine department of the General Electric Co., and "Electric Propulsion" by W. E. Thau, commercial engineer, Westinghouse Electric & Manufacturing Co. The evening session will be devoted to a lecture on "World Communication" by Alfred N. Goldsmith, professor of electrical engineering, City College of New York.

CHEMICAL INDUSTRIES EXPOSITION WELL ATTENDED.

At the seventh National Exposition of Chemical Industries held during the week of Sept. 12 in New York City, there were over 400 exhibitors. The Allis-Chalmers Manufacturing Co., Milwaukee, displayed its pulverator along with motors, generators and air-compressor outfits. The exhibit of the General Electric Co., Schenectady, N. Y., comprised a large electric heating furnace with control switchboards showing the operating apparatus and recording and indicating instruments.

COMING CONVENTIONS.

Illuminating Engineering Society. Annual convention, Rochester, N. Y., Sept. 26-29. Headquarters, Powers hotel. General secretary, Clarence L. Law, 29 West 39th street, New York City.

American Electrochemical Society. Meeting at Lake Placid Club, N. Y., Sept. 29-Oct. 1.

New York Electrical Show, 71st Regiment Armory, Park avenue and 34th street, New York City, Sept. 28-Oct. 8. General manager, George F. Parker, 124 West 42d street, New York City.

Cleveland Section of the American Society of Mechanical Engineers. Great Lakes regional meeting, Cleveland, Oct. 3-4. James Guthrie, Fidelity building, Cleveland.

Indiana State Association of Electrical Contractors and Dealers. Annual convention, Indianapolis, Oct. 5-6. Headquarters, Claypool hotel. Secretary, A. I. Clifford, 507 Odd Fellows building, Indianapolis.

Empire State Gas and Electric Association. Annual convention, Lake Placid Club, N. Y., Oct. 6-7. Secretary, C. H. B. Chapin, Grand Central Terminal, New York City.

Indianapolis Industrial Exposition, Indiana State Fair Grounds, Oct. 10-15, under auspices of the Indianapolis Chamber of Commerce. Chairman, O. B. Iles, Chamber of Commerce building, Indianapolis.

Southeastern Geographic Division of the National Electric Light Association. Annual convention, Chattanooga, Tenn., Oct. 17-19. Headquarters, Signal Mountain Inn. Secretary, Charles A. Collier, Electric and Gas building, Atlanta, Ga.

Electrical Supply Jobbers' Association. Quarterly meeting of Atlantic Division, Bellevue-Stratford hotel, Philadelphia, Oct. 20.

Electrical Exposition, Auditorium, Milwaukee, Oct. 25-31, under auspices of the Milwaukee Chapter of the Wisconsin State Association of Electrical Contractors and Dealers, in connection with the Third Annual Food and Household Exposition, directed by the Milwaukee Journal.

American Institute of Chemical Engineers. Fourteenth annual meeting, Baltimore, Dec. 6-9. Secretary, John C. Olsen, Polytechnic Institute, Brooklyn, N. Y.

Business Hints for the Dealer

HOW A LITTLE SPECIAL TRAINING MADE A DEALER.

Working Blindly for Pay of a Day Laborer Aroused Electrician to Seek a Trade School Where He Acquired Valuable Information.

By James C. Moore.

Eight years ago my time card read "J. C. Moore, Laborer—$1.50 per day." Today I own a fairly decent little store at 94 North street, Endicott, N. Y., and my business turnover amounts to a good many thousands of dollars per year. I don't have to get in line on Saturday night in order to get the $9 which would all go for expenses before another pay was due; on the contrary, I have all of the comforts of life I desire and am my own boss. Every time I drew that $9 for six hard, long days of real work I became more and more dissatisfied. I had little or no education and I realized that, while success might come without it, I would surely make more rapid progress with it.

I was always interested in electrical matters and decided to follow that line. The first 2 yrs. I worked for electrical contractors, assisting in wiring old and new houses and installing motors. This gave me considerable experience and I decided to seek another job, which I did, and assumed the role of journeyman electrician. For 4.5 yrs. I continued this work, doing things the reason for which I did not thoroughly understand. I wanted to know why I did this or that and I realized the handicap of not having a better education. I took a correspondence course but was still inefficient. This course did not supply the real education I wanted. I had heard of an excellent engineering school in Chicago, the Coyne Trade & Engineering School, and the practical methods which were used there in teaching. As the course was very reasonable and I had saved enough to pay the tuition, I decided to go there. When I arrived at the school I was amazed at its size and its equipment, the care and patience of the instructors, the great and genuine interest in the students which seemed to prevail on the part of every official from President B. W. Cooke down through the whole faculty. It just seemed as though they could not do too much for the hundreds of young and even middle-age men from every state in the Union, from the Philippine islands, and many foreign countries who had come to study that they might become better equipped and more competent to succeed in business.

Developments of Trade School Establish Good Business Foundation.

Like all students, I started on the wiring circuits for bell ringing and, step by step, passed

Electrical Appliance Store of James C. Moore, 94 North Street, Endicott, N. Y., Established as the Result of Special Training in an Engineering School.

through house wiring, motor and generator work, a-c. and d-c. control apparatus, instrument testing, and in fact every phase of the actual practical work in which I had been engaged. But,

J. C. Moore.

instead of doing things blindly, I was taught the reason why for every move that was made. Now, when difficulties arise, I am able to reason and decide where the trouble is and how to correct it quickly. I learned drafting and how to read drawings which formerly were all "Greek" to me. Those things which I thought I knew fairly well before, I discovered I knew but very little about. Work which had been hard and slow, became easy and could be done more quickly as I advanced toward the finish of the course.

After graduating in March, 1920, which I did in a comparatively short time by attending both day and evening classes, I again entered the practical field more competent and better equipped than ever before. My earning capacity was vastly increased, my pay began to double and treble and I commenced to save money. Now, 18 mo. after finishing the Coyne course, I own my own business and am making rapid progress toward the day when I shall be financially independent.

I am proud of my success and the little store which is all mine. As the illustration shows, there are cases on one side in which are kept the stock of electrical specialties and household appliances. They are protected from dust and unnecessary handling and yet may easily be viewed by customers who enter the store. In the center of the store are tables upon which are displayed samples of the reading lamps. On the opposite side is a space for demonstrating vacuum cleaners. Fixtures are displayed from the ceiling and are connected up so the customer may see them illuminated. In the rear of the store is a showcase and in one corner I have a variety of porch lights mounted. Back of this I have a room, 10 by 10 ft., furnished with a library table and chairs, where I can show a customer how any fixture or table lamp would look in the home. This feature is very advantageous in making sales of lighting appliances. Besides operating the store I also do a contracting business and carry a stock of all kinds of wiring devices and other supplies.

This result represents much hard work, determination to succeed and long hours of study, but even with all this I believe my present success could not have been accomplished if I had not had the thorough training which my course at the school provided. It is a pity that every so-called electrician and wireman cannot go to this school, for it would mean much to them in their business success.

DO YOU PULL 'EM IN OR DO YOU GO OUT AFTER 'EM?

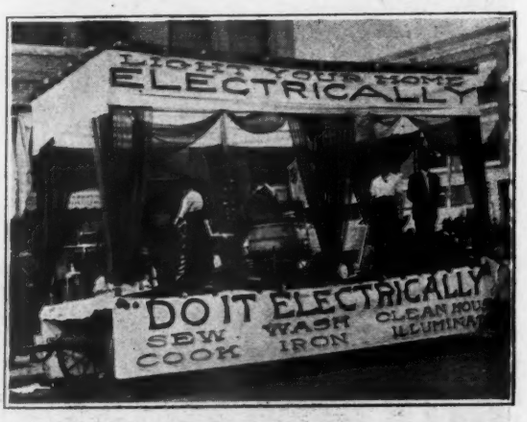
Energetic Contractor-Dealers Find Numerous Ways to Stimulate Business and Turn Over Their Stocks of Household Appliances.

By Frank B. Rae, Jr.

"If you can't pull the business in, go out after it," is the slogan of James L. Mahon, advertising manager of the P. A. Geier Co., Cleveland. "While the Hester street method of doing business may not appeal personally to some dealers, we must acknowledge the effective sales results of their plan. Electrical dealers with the courage to get out of the rut can develop many novel business-getting methods along the lines of the sidewalk merchant."

One vacuum cleaner dealer lays a strip of carpet from the door of his store to the curb and demonstrates his cleaner right there on the sidewalk where the attention of passersby is bound to be attracted. Every pedestrian must walk over the carpet, which act not only stops them momentarily but furnishes a means of accumulating dirt for demonstration purposes. Many fine prospects were secured through this method.

Another scheme is the strip of carpet laid across the front of the store on the sidewalk, between two potted palms, with a chair by each plant. This idea gives the appearance of a hotel lobby as the cleaner is easily demonstrated with the use of a long extension cord. Another dealer successfully utilized the strip of carpet laid from



Bartlesville, Okla., Dealer Uses a Demonstrating Truck on the Streets.

his store door to the curb in another way. He ran a contest awarding a cleaner to the person

who came nearest to determining the amount of dirt that would be found in the carpet at the end of the week. A large sign over the sidewalk informed the public that the carpet would not be removed from 8 a. m. on Monday to 8 p. m. on Saturday night, and that at 9 p. m. the dirt would be weighed in the store window. The new business secured from leads obtained from the names of the registered contestants paid many times over for the cleaner given away.

The neighborhood float demonstration offers another chance to increase sales of electrical household necessities. Construct a float on a motor truck much the same as you would arrange an exhibit at a fair or during "show" week. Provide portable steps so that your prospective customers can examine your goods at close quarters. Of course the dealer must carefully select promising neighborhoods and inform all prospects of the time and the particular corner on which the demonstration will be held. There is almost no limit to the attractiveness with which this idea can be carried out. A typical home scene can easily be arranged, with flowers, etc., to appeal to the women, and an appropriately attired demonstrator to make it realistic. Always keep in mind the fact that such exhibits must be arranged from the viewpoint of the prospect and they cannot fail to stimulate buying action.

During the fall months of delightful weather, when everyone desires to be out of doors at every available opportunity, there will be no difficulty in securing audiences for such demonstrations. Practically every housekeeper goes marketing in the morning and, by arranging the demonstration hours to suit their convenience in this respect, good attendance is assured. Personality has a tremendous influence in these demonstrations. Learn the art of creating a friendly feeling among your audience—start 'em off with a smile. A whole-hearted, friendly smile is contagious in almost every instance. If you can develop in your demonstrations some of this "sunshine philosophy," which is so generally written about but so little practiced, you'll find it a big help in getting audiences in a receptive frame of mind.

Lakeside, O., Dealer Places His Demonstrating Table in the Doorway.

Pennsylvania Dealer Trims His Sidewalk Demonstration With Potted Palms.

Theatrical folks have proven the value of this theory of getting close to the audience—to be one of them, instead of remaining barricaded behind a row of electric lights. Raymond Hitchcock has developed the idea by first appearing in the audience as the curtain is about to go up on the opening scene. Recall how he usually starts off in that rasping, fog-horn voice of his with, "Hey! wait a minute, I'm not there yet, etc." What's the result? Everybody laughs and he talks back to the audience, to the musical director and to whoever may happen to come on the stage. He's started his show with a laugh. The same thing can be done with demonstrations, be they in front of the store or on the shady corner of an attractive residence street.

ELECTRICAL CONTRACTORS CLASSED BY THEIR PRACTICE.

Three Types of Contractors Stand Out Prominently, Judged According to Their Attitude Toward Associations and Business Ethics.

There are engaged in the electrical contracting business three kinds of contractors. This classification justifies the oft repeated criticism—"Why is there such a variation in the bids submitted for electric work"—leaving out the fact that there is an extreme difference of opinion as to what certain architects mean when they make up plans and specifications. We might call them Progressive, Semi-progressive and Non-progressive.

In the progressive class are found those men who are giving all of their time to studying out and putting into practice in their own business all of the most up-to-date methods. Their idea is to have a perfect understanding of their costs; what is required to make a profit; what it costs them to do business; how to keep in touch with the most modern way of doing work; how to

render perfect service to their customers and thus retain them, using only the very best standard materials; continually developing new fields and thus enlarging their possibilities.

These men also give a great deal of their time to their trade association and committee work that goes with such association. They have satisfied themselves that through association is the only way they can keep strictly up to date and hold their place in the front rank, which is necessary in order to make their business a success. They have learned the value of sitting down to the table with their competitors and discussing their various troubles and successes. They have also learned that their competitor's troubles are their troubles, and that they both have to overcome the same difficulties, the same labor troubles, the same dishonest "peddling" of figures and non-payment of bills.

They both deal with the same architects, those who don't know how to write an electrical specification or get up a good plan, and also with the architects that get up a good specification and plan. They both use the same kind of material, that often fails to give results; in fact, they have awakened to the fact that they both have the same troubles and that "two heads are better than one," and that an association of heads allows the complaints of many to be viewed from a number of different angles and be repaired from as many viewpoints.

It does not mean that every progressive contractor succeeds, because he is by necessity a pioneer and, in any place that it is necessary to do pioneering work, some brave fellow must fall by the wayside. But if his fellows follow the path that he has helped to blaze success is sure to crown their efforts, because these men have realized a long time ago that in order to build a more modern and perfect house, known as co-operation, they cannot have a shifty foundation. Attempts to gouge the public and other competitive methods are sure to fall from their own weight. Their foundation must be built so solid that nothing can creep in and spoil what the contractor has accomplished.

Difficult Class of Contractors Who Fail in Full Measure of Co-operation.

The semi-progressive electrical contractor we meet often. He usually belongs to what we call the "show-me" class, that is, they say they want to be shown, but are seldom in such a receptive mood. They have the air of knowing more than anyone else around them, no matter what the subject may be. Sometimes they do, and often they do not, belong to the associations that are trying to build up their business. They make a practice of agreeing very nicely with themselves, but usually any plan that is advanced, although it may be approved and be for the good of the majority, is all wrong.

They are usually too busy to sit down and talk things over with their competitor, too busy to attend to meetings or committee work, unless they have some pet measure that they desire brought up. They are usually strong for street-corner meetings at which every plan is criticised and found wrong if they are not advocates for it. While they are strong in condemning conditions, architects, contractors and others that do not follow the ethics of their trade or profession, they are generally the people to accept a "peddled" bid. They frequently accept a poor credit risk, make mistakes in their estimates, have no cost systems—cannot see the use of them—in fact, their own personal bump of egotism is such that it is hard for a good progressive idea to get into their business. Once in awhile one does get by, and as they reap the benefits of it, do they give the men or association the credit for having accomplished something for them? No.

Still, they are useful to the progressive contractor when he can get them to associate with him for, although they will not allow themselves to be helped, many an electrical contractor who is progressive and has his mental notebook ever in hand has been saved a bad credit risk or avoided a bad condition that our semi-progressive friend has dropped during his talk.

Most of these semi-progressive contractors endeavor to satisfy their customers and give them a square deal but, owing to the fact that they do not know where they stand, they are just as liable to hurt themselves as their customers. In fact, they are too often ready to meet a figure, ready to use any kind of material, ready to take a bad credit risk. If such electrical contractors can succeed under present conditions, it would be unnecessary to have organizations to better the business. They seldom speak a good word for any organization, or of what they are trying to accomplish; the result is, they destroy faster than they build.

Beware of the Business Pirate Among Electrical Contractors.

Last, but not least, is the non-progressive electrical contractor. He was born a long, long time ago; his age entitles him to a great deal of wisdom. He has learned that the unprotected public knows very little about electrical wiring. His principal mission on this earth seems to be to separate the unsuspecting public from their money for a very poor job of wiring.

He rarely belongs to any organization that is working for the good of the business. Occasionally he gets into an organization, but only stays long enough to find out that you can take out no more than you put in. In other words, not being willing to put in any time, money or effort, he gets nothing out of it. The result is, he seldom wastes a postage stamp for the purpose of sending in his resignation and must chuckle with glee whenever he finds that the secretary has wasted one on him in an endeavor to notify him that he is in arrears.

What do such contractors care for the time given by more progressive contractors in an endeavor to better the business; they are not in business for their health. They never have realized, or if so, do not care, that a safe job of wiring is absolutely necessary for the protection of life and property.

Among this same class of contractors can be found the handy man who is willing to do anything from cleaning out the basement to painting the roof. Knowing nothing about the business, he takes chances that a contractor who knew would not dare take. In fact, he is the leech of the business.

ELECTRICAL COMMUNICATION

Items of Interest in Connection with Present Practice and Progress in the Science and Art of Transmission of Intelligence by Electrical Means

GOVERNMENT REPORTS TO BE SENT BY WIRELESS.

A test made by the Bureau of Standards, Washington, D. C., of the Westinghouse radiophone has been reported satisfactory, and as a result a plan has been inaugurated whereby the market reports will be sent broadcast through the Westinghouse radio telephone station *KDKA* at East Pittsburgh, Pa., each evening, except Sunday, on a 330-meter wave length. On Monday, Wednesday and Friday evenings added to the Chicago live stock report will be the hay and feed report, and on Thursday and Saturday evenings the grain report. Also on Tuesday a potato or other fruit or vegetable report will be given. It is possible that farmers within a distance of hundreds of miles of East Pittsburgh will learn of the agricultural market conditions and prices immediately after the closing of the market. The reports will be sent out at about 9:30 p. m.

RADIO EQUIPMENT PURCHASED FOR USE IN POLAND.

Modern American Equipment to Be Employed in Plant Having a Working Radius of Approximately 4000 Miles.

Representatives of the Radio Corporation of America and of the Polish Ministry of Posts and Telegraphs recently signed the final contract which will insure for Poland an international high-power radio station of the most modern type. The new plant will be situated near Warsaw, Poland, and it is estimated that the complete project will cost about $3,000,000. The radio system to be used is that which has been standardized by the Radio Corporation of America for transoceanic radio communication. The station will be equipped with two 200-kw., high-frequency alternators built by the General Electric Co., and the transmitting aerial wires will be approximately 2 mi. in length and will be supported by 10 towers each 400 ft. in height.

The first shipment of apparatus will be made in about 6 mo., and construction work will begin immediately thereafter. It will take approximately a year to complete the station, and it is expected that commercial radio communication between Poland and the United States will commence early in 1923. Heretofore it has always been necessary to relay messages to and from America via other countries, which has subjected such communications to serious delay. However, with the opening up of the new radio station Poland will have direct service with the United States without relay, and also with other countries within range of the new station. This new station will have a normal transmitting radius of 4000 mi. It provides another link in the world-wide wireless chain of the Radio Corporation of America. At present, the Radio Corporation maintains daily and direct radio communication services between the United States and France, Great Britain, Norway, Sweden, Denmark, Finland, Germany and other European countries, as well as between San Francisco, Honolulu and Japan.

ARMSTRONG RADIO PATENT REVIEWED IN COURT.

As a result of litigation extending over a period of years the Armstrong radio "feedback" patent, controlled by the Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., has been held valid by Judge Mayer. This patent covers what is said to be probably the most important circuit arrangement in use in modern radio. It has contributed much to the art of radio telephone communication. The feedback circuit magnifies the signals received by wireless instruments so that signals previously inaudible are now easily readable, and it further permits of very great selectivity, making possible reliable communication between two stations regardless of atmospheric conditions and of the transmission of messages by other stations.

Many radio amateurs are familiar with the circuit. It permits them to receive on a simple small antenna the radio signals transmitted from great distances. Thus it is possible for an amateur in and about New York City with his antenna located on his apartment house and using the Armstrong feedback circuit to hear messages from Nauen, Honolulu, Darien, Norway, Philippine Islands, Lyons, and the great Lafayette station installed by the Americans during the war at Bordeaux, France. It is also depended upon in the delicate work of direction finding which requires receiving instruments of the utmost delicacy. It was used on the *NC* Navy planes which crossed the Atlantic.

Prof. M. I. Pupin of Columbia University says: "Edwin H. Armstrong's contribution to the radio art is epoch making. No one who has employed his feedback can fail to appreciate its eminent value and inexhaustible possibilities."

TELEPHONE BATTERY CHARGING WITH TUNGAR RECTIFIERS.

Floating Charge Maintains Batteries in Good Condition With But Little Attention for Long Periods of Time.

Tungar rectifiers, originally developed for use in charging automobile starting and lighting batteries, are invading many other fields as a result of continual development work by the research laboratory of the General Electric Co. One field

in particular where their qualities have made them highly successful is that of charging the batteries for telephone lines, especially in the more isolated branch exchanges. For such use they have been found to have advantages over either the vibrating or chemical type of rectifier.

There are two methods of applying the rectifier to the lines, depending on the type to be used. The first method is to use a noiseless type floated directly across the batteries on the line. The second method is to use two batteries, one of which is being charged while the other is on the line. There are several Tungars used for the second method, the size depending on the size of the battery. One of these which has a 24 and 30-volt tap, and about 6 ohms resistance, has been found economical for charging the 11 and 12-volt batteries used in private branch exchanges. It possesses considerable inherent regulation in the transformer, making it possible to charge at 1 ampere and 40 volts, or as low as 28 volts with 3 amperes on the 30-volt tap. The efficiency of the set is approximately 50 or 55% except where considerable resistance is used, when it drops to from 30 to 35% with all the resistance in.

For the larger private exchanges using power switchboards a 30-volt, 10-ampere set, with an efficiency at full load of about 59%, or a 40-volt, 12-ampere set with a full load efficiency of 63% or 69% at 46 volts and 10.8 amperes generally is used. By putting a considerable amount of reactance in series between either of these rectifiers and the battery under charge and discharge on the line they can be made as noiseless as any rectifier or generator.

In cases where a noiseless rectifier is used, and floated directly across the line and the batteries, a type has been designed for continuous 24-hr. operation. It delivers just enough power to take care of the discharge and the losses. The set has a resistance stick inside the case so that the floating current can be adjusted to from 0.3 to 0.5 amperes on 11 or 12 cells. It is especially valuable for smaller branch exchanges at some distance from the central offices, or where it is impractical to charge through the trunk lines from the central office. With a continuous floating charge the operator is relieved of the responsibility of charging the battery, and damage to the battery from either overcharge or from being run too low is eliminated.

WESTERN ELECTRIC CO. OFFICIAL VISITS EUROPE.

"Germany today is in a position to undersell the world on most manufactured articles," said Charles G. Du Bois, president of the Western Electric Co., who recently returned from 6 wks. of intensive data-gathering in Europe, during which he visited France, Switzerland, Austria, Hungary, Germany, Belgium and England. "Industrially, Germany seems to be as efficient as ever. With wages low as measured in the currency of other countries, with highly competent workers eager to produce and with the reparation question in a more settled state, Germany is in a position to go ahead in building up her industries to handle export business. At present she can turn out many lines of manufactured articles to sell profitably for less money than any other country. As nearly as I can calculate it, the cost of German labor in the metal working trades, measured in dollars, which is the correct way to measure it when it enters into competition with the United States for foreign trade, is about one-sixth of the cost of equivalent labor here. While in all probability this will lead to protective measures on the part of competing countries, such as taxes on German exports and other measures for the encouragement of home industries, yet wages in such countries are now decreasing and this tendency is likely to continue if they effectively meet German competition in foreign trade."

Mr. Du Bois expressed the opinion that the clearest view of current European economic conditions is obtainable in this country. This was due, he said, to the large number of trained observers employed by American banks and financial periodicals to report such information, and the attention given here to analyzing and presenting the facts. The feelings and sentiments of the European peoples on public questions he thought could best be studied at first hand. "It is almost impossible," said he, "to think of Europe as a whole today. Each country is faced with different problems. In Germany, Austria and Hungary, we find an extremely low exchange rate; low wages even in the terms of what depreciated money will buy, and paper money continuing to be issued by the governments in large amounts."

INDUSTRIAL RESEARCH LABORATORIES IN UNITED STATES.

Research facilities and the development activities of American industries are to be described in the forthcoming revision of Bulletin of the National Research Council, Number 2, "Research Laboratories in Industrial Establishments of the United States of America." Only 300 such laboratories were listed in the first edition, but it is hoped that several hundred new names will appear in the revision and that a more nearly complete reference list will thus become available. The general demand for the first edition of the Bulletin shows the wide interest in this subject and the importance of having every laboratory which devotes even a portion of its time to research properly listed.

The Council requests information from directors of research who have not already supplied it. The following data are wanted: Name and address of firm and address of laboratory; name of director of research; number on laboratory staff (classified as chemists, engineers, bacteriologists, etc.); approximate proportion of time spent on research; chief lines of research; unusual features of equipment; research laboratory space; date of organization of research laboratory and annual expenditure for research. Confidential information is not desired.

It is also requested that librarians in the service of the industries please bring this notice to the attention of the proper officials in their organizations.

This material should be furnished as promptly as possible to the Research Information Service, National Research Council, 1701 Massachusetts avenue, Washington, D. C.

APPLIANCES and DEVELOPMENTS

New, Improved or Interesting Electrical and Mechanical Apparatus and Devices, and Application of Equipment and Methods in Practice

Washer Designed to Comprise as Few Parts as Possible.

The Easiest Way Manufacturing Co., Sandusky, O., has recently placed on the market its No. 16 "Easiest Way" copper tub oscillating electric washing machine, some of the principal features of which are thus described by the manufacturer:

The burnished copper, tin lined oscillating tub in which the clothes and

No. 16 "Easiest Way" Oscillating Electric Washer.

soapy water are placed rocks back and forth, thus forcing the hot suds through the fiber of the cloth, removing all the dirt. It has been designed to comprise as few parts as possible, thus insuring a machine of neat appearance and rigid construction, capable of safely standing up under continuous heavy loads. The tub is of heavy copper—rolled and soldered seams—and oscillates silently. Into the bottom of the tub are rolled three deep corrugations, combined with three ribs on each side of the tub, giving the double somersault action. A slight rinsing will suffice to keep the tub clean at all times.

The tub has a capacity of eight sheets or their equivalent. The water is reversed 84 times a minute and the shock of the weight of the water and clothes against the ends of the tub is so nicely cushioned that all vibration is eliminated and no extra screws, or special contrivance, are necessary to hold the washing machine stationary on the floor—it remains stationary on its own casters. The oscillating tub is controlled by a simple designed friction clutch, eliminating the jar in starting or stopping.

The "Easiest Way" double somersault action washing machine is equipped with oilless bearings throughout. The bearings for the gear shafts are all 1-piece castings, assuring permanent alignment of shafts. The shafts are of large diameter, provided with generous sized bearings. Machine cut gears are used for the main underneath drive, all driving gears being fully encased and noiseless and of slow speed design. The wringer reversing clutch and gears run in an inclosed case in motor grease, and all other parts are inclosed, thus eliminating all danger in operating the machine. The frame is constructed of heavy gray iron castings tied together with 0.75-in. cold rolled round steel bars to insure absolute rigidity. No angle iron is used. The metal parts of the machine, except copper tub and metal wringer, are finished in a light gray enamel and the controlling levers in blue.

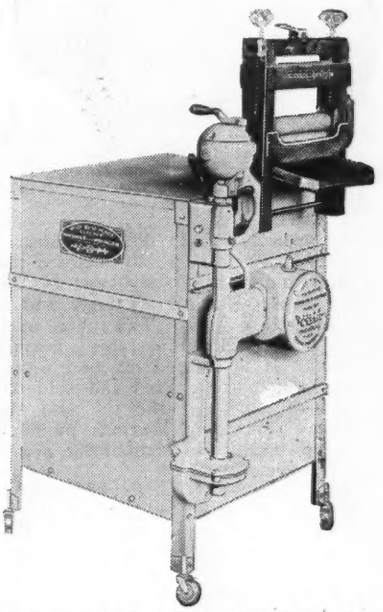
The machine is provided with a simple belt tightener operated with a thumb nut so that the belt can be kept at the proper tension without loosening and tightening nuts or moving the motor. A full 0.25-hp. Westinghouse motor is located under the tub, out of the way, but easily accessible. A brass compression leak-proof drain, with a threaded outlet for hose connection, provides an easy and efficient means for removing the water from the tub and rinsing it after using. The tub balancing springs are so proportioned and located that the danger of a broken spring is practically eliminated.

The metal or wood wringer can be easily swung and clamped in any desired direction, a slight movement of the locking lever holding it rigidly in place. The reversible drain board permits operating the wringer in either direction, the reversing of the 12-in. rolls being controlled by a lever within easy reach from any part of the machine. A quick release on the wringer provides a ready means of removing any clothes that may accidentally become wrapped around the wringer rolls. The casters are equipped with large rollers and anti-friction, positive action swivels, which enables the operator to move a fully loaded machine in any direction with very little effort.

An Electric Washer with Special Reversing Mechanism.

The accompanying illustration shows the "V. B. M." (very best made) electric clothes washer, 1921 model, cabinet type, made by the V. B. M. Co., 2232 Ogden avenue, Chicago. The improved revolving-reversing cylinder method of washing has been thoroughly tested and results prove that this method is one of the most efficient ways to wash clothes. Every bit of each garment is washed evenly, cleanly and without any danger of tangling or tearing the finest fabrics.

Particular attention has been given to make a machine which is convenient to operate and where motor, cylinder and wringer can be stopped instantly if desired. Note the location of control levers at righthand corner of the machine. Satisfactory results in washing are obtained if the cylinder reverses. The special reversing mechanism allows the cylinder to come to a full stop before reversing, thus eliminating the continual jar to the reversing gears, and the strain on the



"V. B. M." Cabinet Type Electric Washer.

motor. This is a very desirable feature.

All moving parts are neatly and safely inclosed, yet easily accessible. No belts or chains to wear out. Wringer release breaks at the center allowing both ends of wringer rolls to be released. The motor has a rating of 0.25 hp., continuous duty, which is ample to operate the cylinder and wringer at the same time. The cylinder reverses every six revolutions.

A Washing Machine With Unusual Features.

Periodically there comes into the market a device or machine with unusual features, radical though desirable, and, the wonder is, that the modifications were not introduced long ago. The "Reliable" washing machine, made by the Clements Manufacturing Co., 609 Fulton street, Chicago, comes within this specification in the field of home utilities.

The "Reliable" washer driving mechanism has but three gears. This fact in itself is a recommendation as most washers require double this number. The machine has an all-metal wringer with emergency release which will not sag and locks at five different

positions of the full circle swing. The wringer is demountable and when the week's washing has been finished it may be lifted from the operating position, laid upon the tub and, when the cover

The "Reliable" Washing Machine.

is in place all the mechanism is completely protected from dirt and dust.

As the machine is wholly inclosed the flat top and rectangular shape of the cabinet make it a perfect table and it may be used as such. The tub is solid copper with double seams heavily soldered. It is carried on two 5-arm spiders which are riveted and soldered to opposite ends of the tub and the trunnions operate in bearings mounted upon the central members of the angle-iron frame as shown.

The "Reliable" oscillates without springs of any sort, is noiseless and sets up a very effective agitation of the suds within, washing the clothes both quickly and effectively. The mechanism is all within easy access through one of the cabinet end panels which is mounted upon hinges. It is only necessary to remove four bolts to remove the whole mechanism should this become necessary. The cabinet is finished in a light tan color with a brown trim, making it a handsome and attractive furnishing for the home. The capacity of the machine is eight sheets or equivalent.

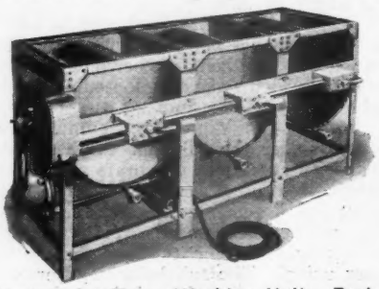
The tub is easily drained through a faucet in the bottom and it may also be readily cleaned as it is not necessary to lift out a heavy cylinder. The driving unit is a 0.25-hp. motor furnished for either d-c or a-c service.

Recent Developments in Berthold Electric Washers.

Many improvements have been made in washing machines since the advent of the old hand-operated dolly type. All of the various prime movers have been used and, to some extent are still used, but water power and the gas engine are rapidly being supplanted for the more convenient electric motor.

The method of applying the power has passed or is passing from the crank method through various adaptations of belts and chains to the more positive, less troublesome and less complicated gear drive which has also been found to be more highly efficient both from the standpoint of current consumption as well as repairs.

One of the older concerns in the manufacture of washing machines, and

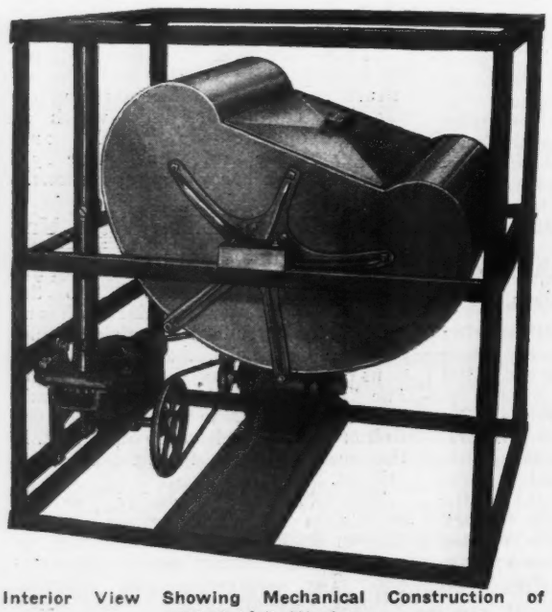


Commercial Type, Washing Units, Berthold Electric Washer.

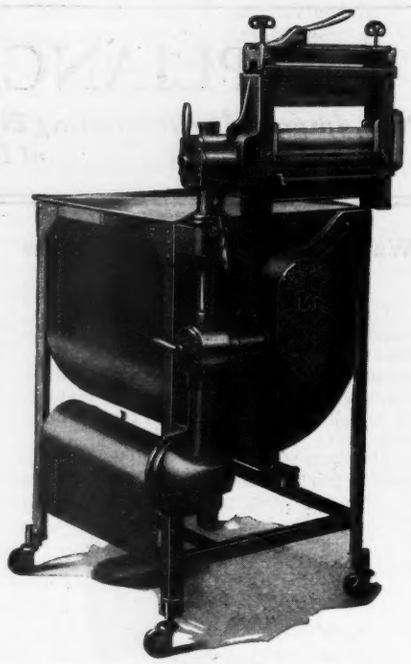
also one of the most progressive, the Berthold Electric Manufacturing Co., 127 South Green street, Chicago, was not merely satisfied to build a good washing machine. Constant study of the problem in all its phases by its engineering department has brought forth a greatly simplified driving mechanism as well as some new phases of washing machine adaptation.

The Berthold washing machine is of the cylinder type, making five complete revolutions and then reversing without the slightest shock. The cylinder comes to a full stop for just sufficient time to allow the clothes to fall from the cylinder sides and settle through the suds, which results in a constant reversal of the washing action and reaches every part of all the clothes being washed.

The framework is of steel angles, galvanized after assembly, which is unusual and adds greatly to the life of the machine as the usual sheared edges are all protected from rusting. This frame carries the tub, made either of copper or galvanized steel with double seams.



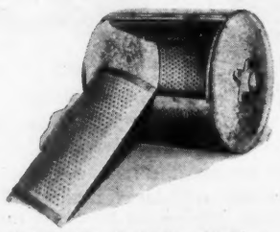
Interior View Showing Mechanical Construction of "Reliable" Washer.



Domestic Type, Berthold Electric Washer.

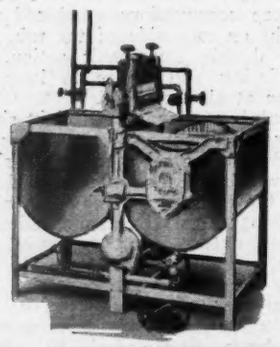
The driving and reversing mechanism, consisting of but two units, is self-contained in high grade cast iron housings. The gears are all machine cut and the helical driving gear and pinion are of steel, heat treated. This is also true of the reversing clutch collar, a part usually made of cast iron.

There are no lubrication holes or



Berthold Cylinder Unit.

grease cups, the whole driving and reversing mechanism being packed in a high-grade lubricating grease guaranteed to operate the machine satisfactorily for a period of 5 yrs., after



Wringing and Rinsing Unit, Berthold Household Type Washer.

which the grease can be easily renewed for another similar period.

The washer is equipped with a swinging wringer with emergency release and a full 12-in. wringing width. The motor, besides being of the "waterproof" type, is protected by a metal cover. The machine is controlled by

Driving Mechanism for Berthold Washing Machine.

two levers, one for the tub and one for the wringer. There are no exposed moving parts so dangerous in any household and particularly where there are children.

Modifications of the Berthold household type of wringer are shown in the "built-in" apartment house type and the "individual-wash" commercial laundry type. Both of these types possess unusual merit, being well designed and made.

The laundry outfit consists of washing unit, made with any desired number of tubs operated from one motor and a rinsing unit of two tubs. In operation the tubs may be operated independently or collectively, the washing removed, tub drained, and another inserted, the sequence of operations being such as to keep the help continuously employed.

Vacuum Brush for Domestic and Other Uses.

The "O. K." vacuum brush has been designed by the O. K. Machine Co., Fort Wayne, Ind., for the purpose of cleaning pool and billiard tables, etc.

"O. K." Vacuum Brush Cleaning Pool Table.

This appliance is a small hand cleaner weighing less than 3 lbs., and has a motor-driven brush and combination dust bag in the handle which is self cleaning by simply removing the aluminum cap on the end of the handle and blowing out the dust with the motor.

The manufacturer states that the "O. K." brush will clean satisfactorily everything cleanable except large rugs, and is being successfully used on upholstered furniture, pillows, mattresses, draperies, clothing, pool and billiard tables, automobiles, felt and plush-lined show cases, in barber shops, and for other purposes. The motor is equipped with Norma ball bearings and operates on 110 volts, d-c. or a-c. service.

Improved Type of the "Sheldon" Electric Iron.

A new and improved electric iron has recently been placed on the market by Casey-Sheldon-Foster, Inc., 165 High street, Boston. This is known as the "Sheldon" electric iron and is shown in the accompanying illustration. The manufacturer states that this appliance is made from the highest grade material and is designed to endure long and hard usage. It heats quickly and retains heat uniformly over the entire ironing surface, according to the claims made for it.

The "Sheldon" electric iron is supplied with a 6-ft. asbestos-covered cord equipped with a detachable plug, allowing for service on other appliances such as toasters, percolators, chafing dishes, etc. The weight of the "Sheldon" electric iron is 6 lbs., and the manufacturer states that to meet the demands

"Sheldon" Electric Iron.

of the fire underwriters proper 2-deck nickelplated stands are furnished with the appliance.

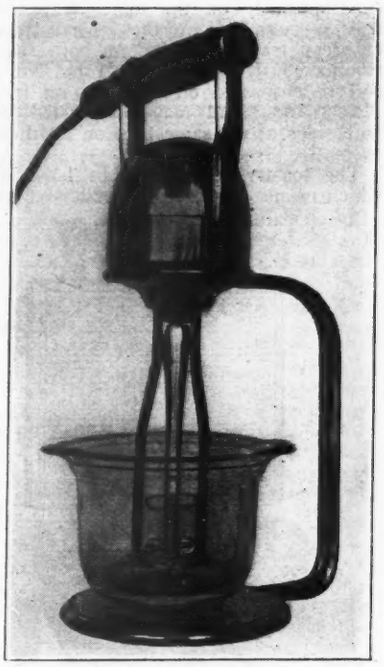
Effective Electrical Food Mixer with Two Speeds.

By applying the same principle used in aerating the water supply of a city, the Air-O-Mix Corp., 51 Beaver street, New York City, has produced the "Air-O-Mix Whip-All," which is an electrically operated device that mixes, aerates, creams and whips liquids, eggs and light batters.

The 110 volts, 25- to 60-cycle, 0.02-hp. motor with which the appliance is equipped, is inclosed and will operate at two speeds on either a-c. or d-c. service. It can be used as a portable mixer or as a stationary one by resting it on its stand, and has 8 ft. of flexible cord for attachment to suitable outlet.

The rapidly revolving spindle which is submerged in the mixture is made of nickelplated steel and when turning not only sends a whirling stream of air bubbles through the food or drink but breaks up the food particles as well and produces a hygienic, palatable and nutritious beverage or food.

The "Whip-All" is sturdily constructed, convenient to handle and its operation readily controlled by a push-button switch at the forward end of the handle. No special receptacle or bowl is required for satisfactory use, but as



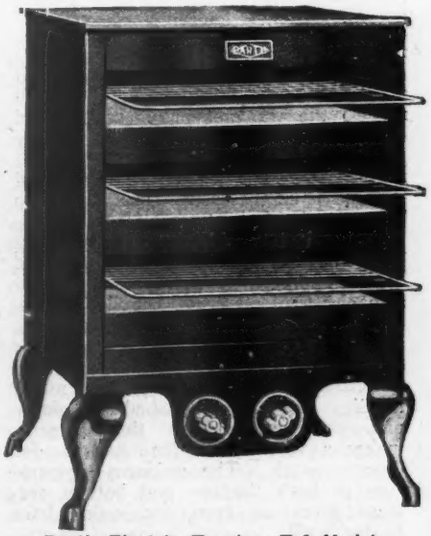
The "Air-O-Mix Whip-All" Device.

long as the spindle is submerged it will work successfully, even in a glass or tumbler.

Toaster and Waffle Baker Added to Barth Products.

To a most complete line of heavy duty electrical kitchen equipment, comprising ranges, broilers, stock kettles, fry kettles, toasters, griddles, urns, carving tables, traveling buffet tables, batch warmers and candy cookers, baking and roasting ovens, L. Barth & Son, Inc., 30 Cooper square, New York City, has recently added an electric toaster and a waffle baker.

The Barth electric toaster, which is made in two capacities, is a combination toaster and fry top and the heat from the upper element is utilized to heat a steel plate which serves the purpose of



Barth Electric Toaster, T-3 Model.

a fry top for short order work. The four heating elements and the three toasting racks are so arranged that bread may be toasted on both sides simultaneously on the upper tray and rolls on one side in the second tray; or bread may be toasted on both sides simultaneously on trays No. 1 and No. 2 and rolls toasted on one side on tray No. 3; or bread may be toasted on both sides at the same time on all three trays.

The toaster requires about 1.5 min., which means that a fresh batch of toast

Barth Electric Waffle Baker, 6-Cake Size.

may be turned out every 30 sec. The flexibility of this service insures the elimination of delay in serving the waiters and assures fresh toast to the guests.

On the T-1 toaster, which is the same in design and dimensions as the T-3 above described, there are but two elements instead of four. The upper element heats the fry top and like the T-3 model, bread may be toasted on both sides simultaneously on tray No. 1 while rolls or bread may be toasted on one side on tray No. 2, at the same time utilizing the top for short order frying, etc. Each tray of every toaster will accommodate 9, 12 or 16 slices, according to the size. The switch control is so arranged that any number of elements may be operated as desired.

The Barth electric waffle baker is made in 6-and 18-cake sizes. In both models the waffle baker is constructed of two cast aluminum plates, highly polished and so hinged together at the rear that the top set can be raised and lowered from the front. There are stop hinges to hold the top-section in a vertical position while the lower form is being filled by the operator. Each half of the appliance is equipped with suitable electrical elements, heavily insulated against loss of heat from radiation and so placed in the fixture that they can be readily inspected. The device is finished in flat black and has a nickel handle, while the polished aluminum plates showing between the elements makes a very attractive fixture for counter work. The uniform temperature in both the top and bottom sections gives an even and quick bake to the waffle.

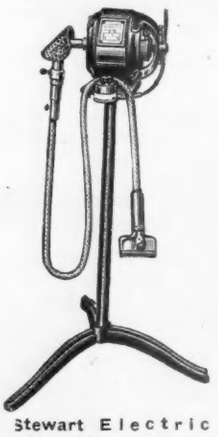
Data on British Electricity Supply Plants.

The 34th edition of The "Electrician" Annual Tables of Electricity Supply Undertakings, 1921, has just been published by Benn Bros., Ltd., 8 Bouverie street, London, England. A departure from previous issues is the new form in which the statistical information is presented and the restoration of details of the generating and steam raising plant omitted during the war. The book, which measures 10 by 12 ins., contains 130 pages and is bound in a flexible linen cover. In addition to giving interesting data on every British electricity supply plant, similar information on the large American power companies and many foreign installations is included. The price is £10-0-9 by mail.

An Electric Machine for Clipping Cows and Horses.

The Stewart electric clipping machine (pedestal type) marketed by the Chicago Flexible Shaft Co., Roosevelt road and Central avenue, Chicago, is designed for the clipping of horses, mules and cows for sales or stock shows. Equipped with a 0.25-hp. motor, at a speed of 1600 r.p.m., the appliance clips very fast and takes care of a large amount of work.

The 6-ft. flexible shaft is connected by a universal joint to the armature shaft of motor, making a positive drive with little chance for lost motion. The device is fitted with an improved Stewart single-tension clipping head, which, it is stated, requires less tension than any other type of head; knives stay sharp longer and give more efficient service. It can be used for sheep shearing by fitting with a special sheep-shearing attachment furnished at a nominal cost. A good length of cord and convenient switch for starting and stopping are supplied with the machine, which can be furnished in 32, 110 or 220-volt, direct current; 110 or 220-volt, 60-cycle, alternating current.



Stewart Electric Clipping Machine.

An Electric Grill and Reversible Toaster Combined.

The Triangle Appliance Manufacturing Co., 160 North Wells street, Chicago, has recently placed on the market the "Tamco" reversible toaster and stove, which the company states is a grill and reversible toaster combined. The main features of this appliance are thus enumerated by the manufacturer:

"Tamco" products are heavily copper plated and then given a double coat of nickelplating which makes them rust proof. The element is standard and guaranteed against corrosion. Felt feet prevent scratching of table. The device is equipped with "plug-all-plugs" which makes it convenient to use any other make of appliance without changing the cord. Heavy contacts are used for connections to prevent burning out. Standard make heater cord and 2-piece

"Tamco" Reversible Toaster and Stove.

separable attachment plugs are used. "Tamco" products are packed in tissue paper in a high-grade box, gold trimmed, which gives them a distinguished appearance in the merchant's stock.

Two-Burner 'Redtop' Kitchenette Hot Plate.

For those desiring to do more than one cooking operation at a time, the Redtop Electric Co., Inc., 10 West 19th street, New York City, has designed the "Redtop" duplex kitchenette. This device is similar to a gas-heated, two-burner hot plate, has a maximum electric power consumption of 660 watts and can be attached to any suitable outlet. The heating element is made of silicochrome wire and so arranged that the total wattage may be applied to either of the two burners or equally divided between them. The stove is intended for cooking a breakfast or light luncheon and is equipped with 6 ft. of detachable, flexible cord and a "Fitzall" socket plug.

"Red Top" Duplex Kitchenette.

ACTIVITIES IN THE TRADE

Business Developments, Sales Agencies, Trade Literature and Miscellaneous Items Concerning Electrical Manufacturers and Allied Business Interests

West Side Telephone Co., Richfield Springs, N. Y., has filed notice of increase in its capital stock to $10,000.

Glen Telephone Co., Johnstown, N. Y., has filed notice of increase in its capital stock from $400,000 to $750,000.

Murphy-Saumby Battery Co., Rochester, N. Y., has filed notice of change of name to the Murphy-Maibaum Co.

Eastern Electric Supply Co., 43 Market street, Portland, Me., sustained a loss of $25,000 Sept. 8, when its plant was damaged by fire.

Electric Heating Apparatus Co., 26 Cortland street, New York City, has filed notice of increase in its capital stock from $20,000 to $70,000.

Aladdin Manufacturing Co., Muncie, Ind., has issued catalog No. 10 covering its line of "Aladdin" lamps. The company states that many of the lamps shown are new numbers added to its product.

Ojax Battery Co., Canaseraga, N.Y., is planning the erection of the second unit of its electric battery manufacturing plant. The first unit has been completed and machinery will be installed at an early date.

Northern Equipment Co., Erie, Pa., has announced that the Ernest E. Lee Co., 115 South Dearborn street, Chicago, has been appointed district representatives for Copes boiler feed regulators and pump governors.

Western Union Telegraph Co., Philadelphia, through its subsidiary organization, the Telegraph Realty Co., has acquired property, 20 by 62 ft., at 230 South 11th street, for the construction of a building for local headquarters.

Henry Hyman & Co., Inc., 476 Broadway, New York City, manufacturer and distributor of "Hylite" fixture accessory parts and "Best" electrical specialties, has prepared an illustrated 4-page folder describing "Hylite" switch and receptacle plates.

Stromberg Electric Co., Chicago, has sold through Eicher & Bratt, sales engineers, eight cost-recording machines and the necessary master clock and relays to Loman & Hanford, Seattle, Wash., which are being installed in the latter's printing establishment.

Eicher & Bratt, sales engineers, Seattle, Wash., report the sale of a time recording outfit, manufactured by Stromberg Electric Co., to the Hawley Pulp & Paper Co., Oregon City, Orc. This consists of four electrically operated "In-and-Out" recorders, with master clock and other equipment, for recording the time of 650 employes.

The Cutter Co., 503 North 19th street, Philadelphia, has issued a folder on the "U-re-lite," which the company states is "an appliance which eliminates the delays, annoyances and continued expense incident upon the blowing of fuses. It is an "I-T-E" circuit-breaker inclosed within a specially constructed steel case from the front of which projects a convenient operating handle."

E. G. Bartling, manufacturers' representative, formerly located at 703 Ford building, Detroit, has removed his office to 617 Book building, Detroit. He has also announced having taken on the agency for the Passaic Rubber Co., Passaic, N. J., handling a full line of tapes, and also the agency for L. D. McFarlan, Sandpoint, Ida., shipper of western red cedar poles.

J. G. Brill Co., Philadelphia, has announced the formation of a new company for the sale and construction of electric and steam railway equipment in Canada. The new company, which is known as the Canadian Brill Co., Ltd., has taken over the plant and equipment of the Preston Car & Coach Co. in Preston, Ont., and has a number of orders now in process of construction.

National Illuminating Appliance Co., 255 West 44th street, New York City, has announced the appointment of the following as distributors of the lamps, lighting fixtures and special illuminating products made under the Henri Raphael Cook process: George F. Burbiage, Box 705, Syracuse, N. Y.; Federal Sales & Supply Co., 1024 Farmer street, Detroit, and B. C. Greene, 34 Greenlawn street, Keene, N. H.

St. Louis Brass Manufacturing Co., 2613 Washington avenue, St. Louis, has issued a 24-page booklet on the Stuart line of lighting fixtures, in which is shown a selection of ultra modern lighting fixtures designed to harmonize with typical home furnishings of today, wherein the atmosphere of repose is obtained by a careful selection of those decorative elements so ably devised by the master minds of three centuries ago.

Apex Electrical Distributing Co., Cleveland, has announced that it has purchased the Gould ironer, which it will manufacture hereafter under a new name in connection with the "Apex" electric suction cleaner and the "Rotapex" electric clothes washer. The Gould ironer was the product of the Gould Appliance Co. of New York City. Benjamin Gould, president of the eastern concern, has joined the Apex organization in Cleveland to supervise the sale of the ironer. With better factory facilities, this ironer will be a greatly improved product, and the Apex Electrical Distributing Co. plans to push its sales vigorously. It is stated that double rollers are one of its big talking points. The heat is applied directly below the rollers, preventing waste. A ⅛-hp. motor is used. Special features are a collar and ruffle attachment and an automatic foot control. The ironer is of steel construction, mounted on roller casters, and is one-third lighter than the average ironer. It is furnished with roller widths of 32, 42, or 46 ins., and is manufactured for either gas or electric heating.

Harbison-Walker Refractories Co., Pittsburgh, has issued a 4-page illustrated folder in which magnesite brick for electric steel furnaces are described. These brick consist of soft steel containers of round or rectangular section, open at the ends, filled solidly with fine-ground, dead-burned magnesite. It is stated that they may be used for the linings of any basic electric furnace.

Tubular Woven Fabric Co., Pawtucket, R. I., has announced that P. S. Klees, who is well known to the electrical trade through his connection with it for over 20 yrs., first with the Franklin Electric Manufacturing Co., and afterward with the Westinghouse and Pierce Fuse Co., and who recently has been in charge of the company's New York territory, has been appointed general sales manager of the company, with headquarters at the factory in Pawtucket. The New York territory will be divided with F. W. Brower in charge of the northern half, including New York City, with headquarters at New York City, and F. M. McDuffie in charge of the southern half, with headquarters at Philadelphia. Ernest C. Alcott, who has been connected with the sales department of the company at the factory in Pawtucket, has been given charge of the Michigan and Indiana territory, with headquarters at Detroit.

Wheeler Condenser & Engineering Co., Carteret, N. J., has issued a new general catalog bearing the title "Wheeler Condensers," which illustrates and describes a complete line of condensers and accessories for stationary and marine service, including Wheeler condensers, vacuum pumps, centrifugal pumps, cooling towers, condenser tubes, feed water heaters, etc. Many of the designs described are of special interest to power plant engineers, since they represent most recent engineering improvement. Among them are a new design of a 26-in. vacuum surface condensing equipment adapted for engine work and dispensing with combined auxiliary pumps; the Wheeler steam jet air pump with combined inter-condenser and heater operating at maximum efficiency without complicated and expensive accessories; the Wheeler jet condenser with expansion joint between condenser body and a turbine and a centrifugal removal pump having a special vertically split casing. In a section devoted to "Crescent Brand" condenser tubes, the precision that enters into each step of the manufacture of these tubes is explained. A condenser data sheet is included with each copy.

PERSONAL MENTION

Biographical Sketches and Chronicle of Changes in Business Connections, Promotions and Other Personal News of the Industry

GEORGE W. LYONS has been appointed assistant superintendent of the electric department, Oklahoma Gas & Electric Co., Oklahoma City, a position made vacant through the death of Earl James.

DR. HOWARD PLANK, Chicago, was re-elected one of the vice-presidents of the American Electrotherapeutic Association, which held its annual convention in Washington, D. C., early this month.

H. B. TITCOME, vice-president of the Pacific Electric Railway Co., Los Angeles, has been elected president of the Southern Pacific Railroad Co. of Mexico to succeed the late Col. Epes Randolph.

J. D. LOZIER, who was recently appointed stores manager of the telephone distributing house of the Western Electric Co. at Philadelphia, was formerly assistant stores manager of the Quaker City organization.

HENRY C. MORRIS has been appointed head of the new fuel division of the Bureau of Foreign and Domestic Commerce, U. S. Department of Commerce, Washington, D. C. He is a graduate of the Massachusetts Institute of Technology.

H. L. OGDEN, purchasing agent of the Gas & Electric Improvement Co., 77 Franklin street, Boston, has accepted an appointment as secretary to the Purchase Information Bureau of the New England Division, National Electric Light Association.

T. E. GALLAGHER, formerly erecting engineer of the Pawling & Harnischfeger Co., Milwaukee, manufacturer of electric cranes, hoists and excavators, has been appointed Eastern sales manager of the company to succeed Walter Price, who has resigned.

CHARLES E. DUSTIN, general secretary of the Associated Manufacturers of Electrical Supplies since its organization 7 yrs. ago, has recently returned to his duties at the Association headquarters, 30 East 42nd street, New York City, after an absence of 2 mo. caused by serious illness.

J. L. CLARKSON left the general secretaryship of the National Federation of Construction Industries on Aug. 1 in order to become Assistant to the President of the John R. Wiggins Co., Inc., prominent builders of Philadelphia. During the 2 yrs. of Mr. Clarkson's connection with the Federation he has been instrumental in widely extending its influence and the scope of its work. The Federation wishes Mr. Clarkson every success in his new work. This new connection means that he will continue to be an active worker for the Federation.

IRA W. FISK has accepted a position as general manager of the Springfield Light & Power Co., Springfield, Ill. Mr. Fisk graduated from the University of Illinois in 1911, following which he was a member of the electrical engineering department of the University of Illinois for several years. He resigned from an assistant professorship to go to Drexel Institute of Philadelphia, as head of the department of mechanical engineering. Later he associated himself with a New York firm of consulting electrical engineers. During 6 yrs. of this time he served as consulting electrical engineer for the company of which he is now general superintendent.

AL. DUSSEAU, recently appointed manager of the Electrical Supply Co. of Toledo, O., returns to the scene of his earlier business career. Mr. Dusseau is a Toledoian, but for the past 6 or 7

Al. Dusseau.

yrs. he has been connected with the Commercial Electrical Supply Co. of Detroit, where for a greater part of this time he was the company's purchasing agent. Prior to that time he was engaged in the electrical contracting business. He is well known not only among the electrical supply manufacturers, but among the contractors and dealers.

OBITUARY.

FREDERICK U. ADAMS died recently at his home, Hastings-on-the-Hudson, N. Y., at the age of 62 yrs. He was a mechanical engineer and interested in scientific research work, one of his first inventions being an electric lamp post, which was followed by an electric light tower.

JOHN S. ZIMMERMAN, for many years secretary of the Peoples Gas Light & Coke Co., Chicago, died recently at Helena, Mont., while visiting his daughter. Mr. Zimmerman succeeded his father as secretary of the old gas company. He entered the service of the company in 1871 and retired in 1909. He was 80 yrs. old at the time of his death.

SAMUEL A. FORTER, superintendent of construction for Dwight P. Robinson & Co., Inc., died recently. He was born in Marysville, Kan., Oct. 15, 1886, and graduated from the University of Kansas, class of 1907, with the degree of civil engineer. Mr. Forter went to Pittsburgh in August, 1919, and was engaged in the construction of the Colfax power station of the Duquesne Light Co.

FRANK M. TAIT, JR., only child of Mr. and Mrs. Frank M. Tait, died at their residence, Llewellyn Park, West Orange, N. J., Sept. 17, at the age of 12 yrs. 10 mo. Mr. Tait, Sr., is prominently identified with the public utilities business throughout the country and was president of the National Electric Light Association in 1912-13. The sincere sympathy of his many friends in the electrical industry is extended to the bereaved parents.

EARL S. JAMES, assistant superintendent of the electric department, Oklahoma Gas & Electric Co., Oklahoma City, died recently as a result of injuries sustained when he came in contact with a high-voltage wire on the outdoor substation of the plant at Oklahoma City. He had been connected with the company for 14 yrs. in practically every capacity in his department. Mr. James was a student of electricity and was an associate member of the American Institute of Electrical Engineers.

CHARLES W. DAVIS, vice-president and general sales manager of the Standard Underground Cable Co., Pittsburgh, died Sept. 11 in the Memorial Hospital, New York City. He had been in failing health for several years and had gone to New York City for special medical treatment. Interment was at Pittsburgh Sept. 13. Mr. Davis was born in Pittsburgh 48 yrs. ago and was educated at the Western University of Pennsylvania, now the University of Pittsburgh, and at the Massachusetts Institute of Technology. His connection with the Standard Underground Cable Co. began shortly after his graduation from college, or about 1899, at which time he was employed by the company as construction engineer on a large cable installation in Mexico City. Later he became superintendent of construction and manager of the central sales department, continuing in these positions until 1915 when he was elected vice-president in charge of general sales, construction and accessories departments. Mr. Davis was well-known in the electrical industry as an expert in the design, manufacture and installation of electric cables and accessories, and had contributed largely to the development of the art by his investigations and occasional technical papers, and by his many inventions dealing with improvements in methods of cable construction, installation and operation. He was a member of the American Institute of Electrical Engineers, the Pittsburgh Club and of the Edgeworth Club and Allegheny Country Club of Sewickley, Pa.

BUSINESS OPPORTUNITIES

News of Electrical Construction Projects in All Parts of the Country, Proposals Invited, Foreign Trade Openings and New Companies

EASTERN STATES.

Concord, N. H.—Considerable electrical equipment, including motors, etc., will be installed in the printing plant to be constructed by the Rumford Press Co., Railroad street, to be 4-story, 81 by 180 ft., estimated to cost $175,000. The erection contract has been let.

Belmont, Mass.—Campbell & Wiswell Co., 162 Elliot street, Boston, will install electrical operating equipment at its new paint and varnish manufacturing plant on Huttinger street, Belmont, contract for which recently has been let. Central station service will be used.

Great Barrington, Mass.—Southern Berkshire Power & Electric Co. has commenced the erection of a dam across the Housatonic river here for hydroelectric power service. Contract for the work has been let to the Fred T. Ley Co., 499 Main street, Springfield, Mass. Charles T. Main, 201 Devonshire street, Boston, is architect.

Haverhill, Mass.—Electrical equipment will be installed in the brick manufacturing plant now being erected by the Bay State Brick & Stone Co.

Bridgeport, Conn.—The electric power plant now being constructed by the United Illuminating Co. at the end of East Main street, will form the first unit of the company's plant in this district, and tentative plans are in preparation for the erection of contemplated extensions. The first unit will comprise a turbine department, boiler department and switch room. Two 10,000-kw. turbogenerators will be installed at once, with intention of installing a third unit of like size at an early date. The boiler plant will be provided with six batteries of boilers, each with 1500-hp. rating, provided with superheaters and stokers.

Amsterdam, N. Y.—Considerable electrical machinery and equipment will be installed in the 5-story mill addition to be erected by the Mohawk Carpet Mills, Inc. Work will be commenced at once.

Brooklyn, N. Y.—Considerable electrical and mechanical equipment will be installed by the Knickerbocker Ice Co., 1480 Broadway, New York City, at its new 1-story ice plant on Kingsland avenue, near Meeker avenue, Brooklyn, estimated to cost $100,000

Carmel, N. Y.—Carmel Light & Power Co. has made application to the Public Service Commission for permission to build an addition to its electric power plant at Patterson. Extensions in the distributing lines for local service will also be made.

East Aurora, N. Y.—Depew & Lancaster Light, Power & Conduit Co. has acquired the East Aurora Electric Light Co. and will take possession and operate the property at once. The company plans the construction of a 11,000-volt power line from its Gardenville substation to East Aurora. The present plant at this latter location will be dismantled and a new substation installed with extension in distributing lines for local service. The company has made application to the Public Service Commission for permission for the work, and also for extensions in its electric system at Marilla, Erie county.

Marilla, N. Y.—Depew & Lancaster Light, Power & Conduit Co., Lancaster, N. Y., has been authorized to extend its electric system into the town of Marilla, Erie county, and to serve the public with electricity.

New York, N. Y.—United Electric Light & Power Co., 130 East 15th street, has filed plans for the construction of two 1-story coaling towers at its new generating plant on Walnut avenue, 133rd to 134th street, estimated to cost $100,000. A 1-story water meter house will also be erected.

New York, N. Y.—The Rice Foundation, 12 East 87th street, has filed plans for the erection of a 1-story power house at Pelham Bay Park, to be used for institutional service at this location. It will cost about $25,000.

Patterson, N. Y.—Carmel Light & Power Co., Carmel, N. Y., has petitioned for permission to construct an extension to the electric plant in a portion of the town of Patterson and for the approval of the exercise of a franchise received from the town of Patterson.

Pearl River, N. Y.—Considerable electrical equipment will be installed in the addition to be erected at the local plant of the Dexter Folder Co., 28 West 23d street, New York City, estimated to cost $100,000.

Tompkinsville, S. I., N. Y.—Electric hoisting equipment, freight loading and unloading equipment, etc., will be installed in the 7-story warehouse to be constructed by the American Dock Co., 17 State street, New York City, at its local pier on Arretta street.

Essex Falls, N. J.—The Borough Council has approved a bond issue of $30,000, the proceeds to be used for improvements to the municipal waterworks, including the installation of new electrically-operated pumping machinery.

Hoboken, N. J.—Electrical equipment will be installed in the 1-story plant to be constructed by the White Metal Manufacturing Co., Grand street. Plans have been prepared.

Lakehurst, N. J.—The Bureau of Yards and Docks, Navy Department, has taken bids for extensions and improvements to its local power plant.

Newark, N. J.—The Board of Freeholders, Court House, has approved plans and directed County Purchasing Agent George C. Bergen to call for bids for the construction of an ash conveyor system and storage plant at the power house at the isolation hospital, Soho. Also, for the construction of a coal conveyor and coal conveyor system at the Overbrook Hospital, near Verona, N. J.

Summit, N. J.—The Common Council is planning improvements in the street-lighting system.

Berwick, Pa.—The pumping station of the Berwick Water Co. was recently destroyed by fire, with a loss estimated at $100,000.

Clifton Heights, Pa.—Clifton Yarn Mills have filed plans for the erection of a 1-story powerhouse at its plant.

Doylestown, Pa.—Bucks County Public Service Co. is planning extensions in its system to Mechanics Valley, Buckingham, Lahasha and Holicong, with local distributing lines for light and power service. It is also proposed to extend the transmission lines to New Hope and Aquetong.

Lancaster, Pa.—Pequae Electric Co., recently organized, is planning the purchase of the electric properties of the Farmers' Electric Co., Martic township. A number of extensions and improvements will be made.

Philadelphia, Pa.—The Bureau of Water, C. E. Davis, City Hall, engineer, will install a new electric traveling crane at the Shawmut pumping plant of the waterworks system.

Philadelphia, Pa.—A power plant will be erected by the Mayer Baking Co., 60th and Hazel avenues, in connection with the construction of its proposed baking plant on Thomas avenue, estimated to cost $140,000.

Philadelphia, Pa. — Considerable electrical equipment will be installed in the 10-story and basement plant to be erected by the Hurley Motor Co. at 219-25 North Broad street, estimated to cost $350,000. John S. Hurley is president.

Philadelphia, Pa.—S. W. Evans Co., 4523 Paul street, will build a 1-story powerhouse in connection with the erection of an addition at its metal manufacturing plant.

Philadelphia, Pa.—Franklin Sugar Refining Co., Reed and Meadow streets, has filed plans for extensions and improvements in its local powerhouse, used for sugar refinery service, to cost about $20,000.

Pittsburgh, Pa.—Pittsburgh Railways Co. is planning the rebuilding of its substation at Bellevue, recently damaged by fire.

Pittsburgh, Pa.—Considerable electrical and mechanical equipment will be installed in the proposed plant ad-

dition to be erected at the cold storage works of the Tech Food Products Co., 36th street, near Butler street. It is planned to increase the capacity from 700,000 to 2,200,000 cu. ft. Plans are being prepared.

Pittsburgh, Pa.—Considerable electrical equipment will be installed in the 1- and 2-story commercial oxygen manufacturing plant by the Air Reduction Co., 120 Broadway, New York City, to occupy a site recently acquired on Ridge avenue. It is estimated to cost $250,000 with machinery. Francisco & Jacobus, 511 Fifth avenue, New York City, are architects.

Baltimore, Md.—Considerable electrical equipment will be installed by the Canton Co., Commerce and Water streets, in its new 4-story lard manufacturing plant, estimated to cost $75,000.

Betterton, Md.—Betterton Ice & Power Co., recently organized with a capital of $200,000, will operate a local electric light and power plant for commercial service in this district. The company is also planning the erection of an ice-manufacturing plant. John Brice heads the company.

Catonsville, Md.—A powerhouse will be erected by the board of directors of St. Charles College, in connection with the construction of a number of buildings at the institution, estimated to cost $200,000. Electrical equipment will be installed in the baking plant, kitchen and other departments of the new college structures.

Danville, Va.—The Common Council is arranging for a bond issue of $10,000 for the installation of an electric lighting system.

Norfolk, Va.—Considerable electrical equipment, mechanical apparatus, refrigerating machinery, etc., will be installed in the proposed plant addition to be constructed by the Anheuser-Busch Co., estimated to cost $250,000. Ophuls, Hill & McCreery, Inc., 112 West 42d street, new York City, are engineers.

Yorktown, Va.—The Bureau of Yards and Docks, Navy Department, Washington, D. C., will soon commence the installation of new equipment at its local electric power plant. The machinery will be purchased under Specification 4508 of the Bureau.

Arnettsville, W. Va.—P. V. & K. Coal Co., 242 Main street, Monongahela, Pa., is planning the installation of new electrical equipment at its local coal properties. It is proposed to develop a capacity of 1500 tons per day. R. H. Robinson is treasurer and general manager.

Logan, W. Va.—Kentucky & West Virginia Power Co., 30 Church street, New York City, has awarded a contract to the Foundation Co., 120 Liberty street, New York City, for additions to its power plant at Logan. The work will include extensions to the generating department, switchboard room, and other departments, with new outdoor switching station, and is estimated to cost $1,500,000, including equipment. Francis R. Weller, Hibbs building, Washington, D. C., is consulting engineer.

Columbia, N. C.—The Common Council has awarded a contract to the Tucker & Laxton Co., Charlotte, N. C., for the construction of a power line for increased electrical supply for city service.

Kinston, N. C.—The City Council is arranging a bond issue of $300,000, the proceeds to be used for extensions and improvements to the municipal electric power plant and distributing system. Plans for the work will be prepared at an early date.

Raleigh, N. C.—North State Power Co., recently organized with a capital of $250,000, will operate a generating plant for local light and power service. L. H. Crouch, Raleigh; and J. B. Johnson, Cardenas, N. C., head the company.

Dalton, Ga.—Considerable electrical equipment will be installed in the proposed 2-story plant to be erected by the Dalton Ice Co., recently organized. Plans have been prepared. T. B. Wright and J. J. Copeland head the company.

Gainesville, Fla.—The City Council is perfecting plans for extensions ir the municipal electric lighting plant, operated in conjunction with waterworks system to cost about $30,000. Bonds for this amount have been approved.

NORTH CENTRAL STATES.

Findlay, O.—Bids were received Sept. 23 for the construction of an electric light and power line between Toledo, Bowling Green and the Southern company's line at the Hancock County Infirmary, and the Liberty Township Centralized School building. Address Paul Porter, clerk, Board of Education of Liberty Township, Findlay, O.

Alpena, Mich.—Electrification of the city waterworks in all parts, including the new filter plant, was discussed at a recent conference held at the City Hall. Address Engineer Clark.

Globeville, Mich.—The village has voted to extend a franchise to the Michigan Gas & Electric Co. of Three Rivers, to operate electric lines here. An effort will be made to induce the company to string the wires so that street, store and residence lights may be installed before winter. Address the mayor.

Grand Rapids, Mich.—A new system of city lighting is proposed. Address Joseph H. Mara, superintendent of city lighting.

Lansing, Mich.—Plans are being discussed by a committee from the Electric Light and Water Commission and J. E. Woodwell, consulting engineer from New York City, relative to the construction of an electric light and power plant, work on which is expected to be under way in about 2 mo.

Royal Oak, Mich.—An estimated cost of the installations and maintenance of boulevard lamps on Washington avenue, Fourth and Main streets, will be presented to the Royal Oak Real Estate Board by City Manager P. H. Beauvais.

Huntington, Ind.—The Huntington Light & Fuel Co. has filed a petition for the right to build a power line over the Erie railroad on the Columbia City road.

Danville, Ill.—The City Council is planning ways and means to improve the city lighting system. Address city clerk.

Dixon, Ill.—The Illinois Northern Utilities Co. has made application for the construction of an electric transmission line through the town of New Boston and 1.5 mi. east of New Boston.

South Pekin, Ill.—Bids were received Sept. 20 for the construction of an electric light, heat and power trunk line to be erected by the South Pekin Light & Power Co. Address James S. Hill, president.

Antigo, Wis.—The Wisconsin Traction, Light, Heat & Power Co. will develop the power plant site on Wolf river at Gardner dam to furnish 12,000 hp., and will build a transmission line to Antigo.

Sheboygan, Wis.—Plans for an electric transmission line that will connect Sheboygan, Fond du Lac and Oshkosh were made public in Sheboygan by Harris Ellis, vice-president of the Eastern Wisconsin Electric Co. The estimated cost of the project is $500,000. Work will begin at once on the construction of the transmission line between Sheboygan and Fond du Lac, a distance of 44 mi. Address Harry Ellis.

Stevens Point, Wis.—Three petitions for street lamps were submitted to the City Council recently and were referred to the Lighting Committee.

Kansas City, Mo.—The City Council is planning the installation of a new street-lighting system on Gladstone boulevard and on 31st street.

Kansas City, Mo.—Considerable electrical equipment will be installed in the proposed plant to be erected by the City Ice Co., 21st and Campbell streets, comprising two structures, 60 by 80 ft.

SOUTH CENTRAL STATES.

Carrollton, Ky.—Bonds to the amount of $18,000 have been voted to be expended on the light and water plant. Address J. E. Guillion, mayor.

Carbon Hill, Ala.—Considerable electrical equipment will be installed in the plant to be erected by the Artesian Ice Co., recently organized. The machinery installation will cost about $16,000. James Nichols, Jr., is president.

Payne Bend, Ala.—Daniel Duffee Coal Co., 1801 Jefferson County Bank building, Birmingham, Ala., is planning the installation of electrical and other equipment at its properties near Payne Bend. Robert L. Daniel is president.

Abbeville, La.—Light and water bonds to the amount of $125,000 have been voted by the city. Address the mayor.

Plain Dealing, La.—M. S. Bolinger, president, Plain Dealing Light & Power Co., will erect a corrugated iron building; install 15 and 25-hp. oil engines; 15 and 30-kw. d-c. 220-volt generators and 5-10-hp. motors.

Lepanto, Ark.—The Common Coun-

cil is planning the installation of a new municipal electric power plant, in conjunction with waterworks and sewerage systems, estimated to cost $100,000. It is proposed to issue bonds in this amount.

Bartlesville, Okla.—The City Commissioners will improve the lighting system of the city. Address A. F. McCable, mayor.

Crescent, Okla. — The Common Council is planning a bond issue of $60,000, the proceeds to be used for the installation of a municipal electric power plant, and other town improvements.

Fairfax, Okla.—Final plans for water and sewer extensions, sewage disposal plant and "white way" to cost $85,000 have been prepared by V. V. Long & Co., consulting engineer, 1300 Colcord building, Oklahoma City.

Hartshorne, Okla. — The Town Council is considering plans for the installation of a new street-lighting system on main thoroughfares.

Pryor, Okla.—The Common Council will take bids at once for the construction of a new transmission line, about 8 mi. long, for increased power service for the city. V. V. Long & Co., 1300 Colcord building, Oklahoma City, are engineers.

Dickinson, Tex.—A charter has been granted providing for the installation of an electric lighting system. Address J. M. Parks, chairman of the board of directors. The board has been authorized to seek bids for wire and poles.

Harlingen, Tex. — The Common Council has arranged for a bond issue of $32,000 for the installation of an electric power plant.

Kyle, Tex.—Kyle Light & Power Co. is planning the rebuilding of its power plant recently damaged by fire.

Texline, Tex.—The Common Council has approved a bond issue of $55,000, the proceeds to be used for the installation of a municipal electric plant and for other town improvements.

Timpson, Tex. — Bonds to the amount of $30,000 have been voted for the building of a municipal lighting plant. Address the mayor.

Whitney, Tex. — The Common Council has plans under way for a bond issue of $15,000 for the construction of a municipal electric light plant.

WESTERN STATES.

Santa Fe. N. M.—Santa Fe Water & Light Co. will petition for a franchise for furnishing light and water.

Logan, Utah.—The project of a reservoir with a storage capacity of more than 60,000 acre-ft. of water, to be built at the Twin bridges, 22 mi. from Logan, in the fork of Logan canyon, is being investigated by the Logan Water Users' Association.

Phoenix, Ariz.—Stene Consolidated Copper Co. has applied to the Federal Power Commission for a preliminary permit covering the following project: Dam and reservoir in the Bill Williams river, about 30 mi. from its mouth in Mohave and Yuma counties. The water will be diverted through a power canal about 35 mi. long to a proposed powerhouse near Planet. The water will also be used for irrigation where practicable. The proposed use is power for mining, pumping, and public utility purposes.

Cottage Grove, Ore.—Bonds to the amount of $50,000 have been authorized for an electric light system. Address the mayor.

Salem, Ore.—The directors of the Oregon Pulp & Paper Co. have voted to build a dam across Mill creek, erect a modern powerhouse and provide transmission lines to the main paper plant at an estimated cost of $100,000.

Cascade Bay, Alaska.—Frank C. Dougherty, Palace hotel, San Francisco, has applied to the Federal Power Commission for a preliminary permit for the following project: Development of power on the Green Lake outlet at Warm Spring Bay, and on Second Lake outlet at the head of Cascade Bay, all on Baranof Island, Alaska. The projects involve the development of storage in the above lakes. The proposed use is for the manufacture of wood plup.

Douglas, Alaska.—Freshwater Bay Lumber Co. has applied to the Federal Power Commission for a license for the following project: Low diversion dam at outlet of a small lake; a flume and waterwheel on a small stream at the head of Pavloff Harbor, Chichagof Island. The proposed use is power for a sawmill.

Karta Bay, Alaska.—Frank C. Dougherty, Palace hotel, San Francisco, has applied to the Federal Power Commission for a preliminary permit for the development of power on Karta river at the head of Karta Bay, Prince of Wales Island, Alaska. The project involves the development of storage in Salmon and Little Salmon lakes. The proposed use is for the manufacture of wood pulp.

PROPOSALS.

Carrollton, Ill.—Bids will be received Sept. 27 for the furnishing of material and construction for the Eldred Drainage and Levee District, of one electric lighting plant system, similar to the "Delco" type for lighting the pumping station and buildings, including installation. Address O. C. Bartholomew, commissioner of the Eldred Drainage and Levee District.

New York, N. Y.—Murray Hulbert, Commissioner of Docks, Pier A, will take bids until Oct. 4 for furnishing and installing electric cranes, elevators, power transmission equipment, and boiler plants on Piers 12 and 13, Stapleton, S. I.

Sayre, Okla.—Bids will be received Oct. 25 for waterworks, light and sewer extensions and power plant. The project includes approximately 1 mi. of water mains; 1 mi. of sanitary sewers; 200,000-gal. reinforced concrete reservoir; two 300 g.p m. motor-driven pumps; one 500 g.p.m. marine engine fire pump; one 75 and one 125-kv.a. oil engine generator sets. V. V. Long & Co., consulting engineer, 1300 Colcord building, Oklahoma City. W. E. Simmonds, city clerk, Sayre, Okla.

INCORPORATIONS.

Lansford, Pa.—Carbon Battery & Electric Co. Capital, $5000. To manufacture and deal in electrical equipment. Milton Kleckner, Lansford, is treasurer.

Allentown, Pa.—Barry Electric Co. Capital, $5000. To deal in electrical products. C. M. Walter, Allentown, is treasurer.

Boston, Mass.—Edison Fixture Co. Capital $5000. To manufacture electric fixtures and other electrical equipment. Incorporators: Caesar Heyndricks, 37 Shurtleff street, Chelsea, Mass., and Harry E. Kidd, Boston.

New Bedford, Mass.—Leonard A. Sylvia, Inc. Capital, $15,000. To manufacture electrical machinery. Leonard A. Sylvia, president and treasurer, New Bedford.

Buffalo, N. Y.—Schloezer-Ash Mfg. Co. Capital $20,000. To manufacture electric motors, etc. Incorporators: L. F. and M. J. Schloezer, and J. H. Ash.

Scranton, Pa.—The Penn Township-York Power Co. Capital, $5000. To operate a local electric system. F. Heinbokel, Scranton, is treasurer.

Cazenovia, N. Y.—Cazenovia Telephone Co. Capital, $100,000. To operate a local telephone system. Incorporators: M. R. Joy, A. B. Carpenter and H. Gurden. The company is represented by B. H. Shepard, Syracuse, N. Y.

New York, N. Y.—Inter-City Telegraph Co. Capital, $50,000. To operrate a local telegraph system. Incorporators: R. A. Adams, F. A. Hinners and K. L. Zimmerman. The company is represented by L. Oppenheimer, 60 Wall street.

Everett, Mass.—Everett Electrical Co. Capital, $50,000. To manufacture electrical equipment. Roy C. Blackburn is president, and Michael F. Culliney, 15 Olney street, Dorchester, Mass., vice-president and treasurer.

Boston, Mass.—Frank P. Anthony, Inc. Capital, $10,000. To manufacture and deal in electric motors and parts. Carroll G. Anthony is president, and George J. Chabot, secretary.

FOREIGN TRADE.

[Addresses of firms referred to in these trade opportunities may be obtained by writing to the Bureau of Foreign and Domestic Commerce, Washington, D. C., or its branch and local co-operative offices. Request for each opportunity should be on a separate sheet and the file number given.]

Electrical Appliances (8)—A mercantile firm in India desires to secure an agency for the sale of electrical appliances, etc. Payment to be made through bank in India. References.

Refrigerators (16)—A merchant in the Dutch East Indies desires to purchase and secure an agency for the sale of a good line of refrigerators for home and hotel use and also small refrigerating units for houses, hotels and stores. Quotations should be given c. i. f. Java ports. Payment to be made against documents.

FINANCIAL NEWS

Comment on the Financial Outlook in the Electrical Industry, New Securities, Reports of Earnings, Dividends and Utility Stocks

New Issue of Appalachian Power Co. Gold Bonds.

Bonbright & Co., Inc., Paine, Webber & Co., W. C. Langley & Co. and Montgomery & Co., Inc., Chicago, are offering a new issue of $2,500,000 Appalachian Power Co. 15-yr. 7% secured gold bonds, non-callable, at a price of 90 and accrued interest, to yield about 8.15%.

The Appalachian Power Co. owns and operates modern hydroelectric and steam power stations serving 17 cities and towns in Virginia and West Virginia with electric light and power. Power is also supplied to public utilities, manufacturing interests and mines in Virginia and West Virginia, including the Pocahontas coal fields. It is stated that the cost value of the physical property is largely in excess of the total funded debt of the company outstanding in the hands of the public, including these bonds.

The earnings of the company for the 12 mo. ended July 31, 1921, with comparison for the corresponding period in 1920, are reported as follows:

	1920.	1921.
Gross earnings	$1,911,219	$2,502,116
Operating expenses, including maintenance and taxes	1,092,406	1,408,549
Net earnings	$ 818,813	$1,093,567
Annual interest charges on $9,174,000 first mortgage 5% bonds		458,700
Balance		$ 634,867
Annual interest on $2,500,000 15-yr. 7% secured gold bonds (this issue)		175,000

Pacific Gas & Electric Co. Earnings.

Earnings of the Pacific Gas & Electric Co. for July and the 7 mo. ended July 31, 1921, compare very favorably with those of the corresponding periods of last year. While July gross of $2,987,341 was $37,233 less than in July, 1920, this was more than offset by the big reduction in operating expenses, which amounted to only $1,912,646 against $2,105,866 for the same month last year, a decrease of $193,220. After providing for all charges there remained a surplus of $364,010 against $289,609 in July, 1920.

According to Vice-president, A. F. Hockenbamer, the decrease in gross business for July was due mainly to a smaller seasonable demand for electric energy for irrigation purposes. He predicts that future operating expenses will show a still further decline because of lower commodity prices, the bringing in of new hydro-electric plants and a better water supply. Additional hydro-electric energy amounting to 36,800 hp. will be available, he says, within the next 30 days. The company's Pit River plant No. 1, designed to deliver 93,000 hp., at minimum steam flow, and without storage, is expected to be completed by the middle of next summer.

The company practically earned the common dividend requirements for the year during the first 7 mo. It had on hand on July 31, 1921, over $6,670,000 in cash besides other quick assets of a substantial amount, while its current liabilities include only items due to the current operations. The number of customers was increased during the first seven months of this year by 13,011, bringing the total permanently connected to 582,370. Earnings for July and the 7 mo ended July 31, 1921, with comparisons with similar periods of last year are as follows:

	1921.	1920.
July gross	$2,987,341	$3,024,574
Net after taxes	1,074,695	918,708
Surplus after charges	364,010	289,609
7 mo. gross	21,954,527	19,252,208
Net after taxes	7,930,470	6,571,217
Surplus after charges	2,883,113	2,209,527
Balance after preferred dividends	1,637,710	1,160,310
Balance after common dividends	645,530	168,156

Offering of Havana Electric Railway, Light & Power Co. Bonds.

A closed issue of $1,500,000 Havana Electric Railway, Light & Power Co. 5-yr. 7% secured convertible gold notes was recently offered to the public by Hemphill, Noyes & Co., 37 Wall street, New York City, at a price of 97 and interest, yielding about 7.75%. The Electric Company is a New Jersey corporation and furnishes exclusively the entire electric light, power, gas and street railway service in Havana. It also operates the suburban line between Havana and Marianao, Cuba. A population of approximately 400,000 is served.

The company is engaged in installing additional equipment in its electric power and gas plants which will increase the capacity of both over 50%. This material has been purchased in the United States and current payments therefor have been made out of earnings. The proceeds of this issue will be applied toward the reimbursement of the company for such capital expenditures incurred in the completion of these extensions of its plants.

The earnings of the company for the 6 mo. ended June 30, 1921, compare with the earnings for the same period in 1920 as follows:

Six mo. ended June 30—	1921.	1920.
Gross revenues	$6,404,016	$5,557,941
Net income	2,676,834	2,656,985
Interest charges	489,362	483,789
Times earned	5.47	5.49
Balance	2,187,472	2,173,196

New York Utilities Increase Capital Stock.

The Syracuse (N. Y.) Lighting Co. has certified that it has increased its capital stock from $4,000,000 to $6,000,000.

The capital stock of the Niagara & Erie Power Co., Buffalo, N. Y., has been increased from $300,000 to $900,000.

Abitibi Power & Paper Co., Ltd.

In a communication to stockholders, the company states that for the 6 mo. ending June 30, 1921, with the month of June estimated, the net surplus profits, after deductions for depreciation, all interest charges, and preferred stock dividends, were in excess of $1,500,000.

Pennsylvania Utilities Ask Permission to Issue Securities.

A number of electric power companies operating in different parts of Pennsylvania have filed application with the Public Service Commission at Harrisburg, Pa., for permission to issue securities, the proceeds to be used for general operations and financing, extensions and improvements, etc., as follows: Penn Central Light & Power Co., Altoona, stock, $547,863; Sayre Electric Co., Sayre, bonds, $40,500; Metropolitan Edison Co., Reading, bonds, $50,000; Eastern Pennsylvania Railway Co., Pottsville, bonds, $39,000; and the Weisenberg Township Electric Light & Power Co., Topton, stock, $20,000.

United Gas & Electric Subsidiary Companies.

	1921.	1920.
July gross	$ 955,506	$ 936,286
Net after taxes	320,556	259,325
Total income	347,221	282,223
Surplus after charges	135,942	81,404
12 mo. gross	12,512,427	11,404,516
Net after taxes	3,809,640	3,790,369
Total income	4,086,143	4,053,578
Surplus after charges	1,475,253	1,598,329

Dividends.

	Term.	Rate.	Payable.
Abitibi Pr. & Paper, pfd.	Q	1.75%	Oct. 1
Am. Pub. Serv., pfd.	Q	$1.75	Oct. 1
Am. Gas & El., com.	Q	2.5%	Oct. 1
Am. Gas & El., pfd.	Q	1.5%	Nov. 1
Buffalo Gen. El., com.	Q	2%	Sept. 30
Can. Crocker-Wheeler, com.	Q	1.75%	Sept. 30
Can. Crocker-Wheeler, pfd.	Q	1.75%	Sept. 30
Dayton Pr. & Lt., pfd.	Q	1.5%	Oct. 1
Duluth Edison, pfd.	Q	1.5%	Oct. 1
Mfrs. Lt. & Heat (Pitts.)	Q	$1	Oct. 15
Niagara Falls Pr., com.	Q	$1.50	Sept. 15
Niagara Falls Pr., pfd.	Q	$1.75	Oct. 15
Pacific G. & El.	Q	$1.25	Oct. 15
Puget Sd. P. & L., pfd.	Q	$1.50	Oct. 15
Tri-City Ry. & Lt., pfd.	Q	1.5%	Oct. 1
United Gas Impr., com.	Q	1%	Oct. 15
United Gas Impr., pfd.	Q	1.75%	Dec. 15
United Lt. & Rys., 1st pfd.	Q	1.5%	Oct. 1
Util. Sec. Corp., pfd.	Q	1.75%	Sept. 27
Western Un. Tel.	Q	1.75%	Oct. 15

WEEKLY COMPARISON OF CLOSING-BID PRICES OF SECURITIES OF LEADING ELECTRICAL COMPANIES.

Quotations furnished by F. M. Zeller & Co., Rookery Bldg., Chicago.

Public Utilities—	Div. rate. Per cent.	Bid Sept. 12.	Bid Sept. 19.
Adirondack Electric Power of Glenns Falls, common	6	10	9½
Adirondack Electric Power of Glenns Falls, preferred	6	69	70
American Gas & Electric of New York, common	..	101	102
American Gas & Electric of New York, preferred	6	37½	37½
American Light & Traction of New York, common	..	93½	92
American Light & Traction of New York, preferred	6	79	79
American Power & Light of New York, common	4	57	56
American Power & Light of New York, preferred	6	66	65½
American Public Utilities of Grand Rapids, common	..	10	11
American Public Utilities of Grand Rapids, preferred	..	17	17
American Telephone & Telegraph of New York	9	..	109
American Water Works & Elec. of New York, common	..	4	4
American Water Works & Elec. of New York, particip	7	8	7½
American Water Works & Elec. of New York, 1st preferred	..	47	46½
Appalachian Power, common	..	4½	4
Appalachian Power, preferred	7	31	29
Cities Service of New York, common	+extra	120	118
Cities Service of New York, preferred	6	44	43½
Commonwealth Edison of Chicago	8	108½	108
Comm. Power, Railway & Light of Jackson, common	..	10	10
Comm. Power, Railway & Light of Jackson, preferred	6	28½	28
Federal Light & Traction of New York, common	..	6½	7
Federal Light & Traction of New York, preferred	..	44½	43½
Northern States Power of Chicago, common	..	43	44
Northern States Power of Chicago, preferred	ex.div.7	79½	79
Pacific Gas & Electric of San Francisco, common	..	56	56
Public Service of Northern Illinois, Chicago, common	7	78	79
Public Service of Northern Illinois, Chicago, preferred	6	80	80
Standard Gas & Electric of Chicago, common	..	7½	7½
Standard Gas & Electric of Chicago, preferred	8	33½	35
Tennessee Railway, Light & Power of Chattanooga, common	..	¾	¾
Tennessee Railway, Light & Power of Chattanooga, preferred	6	4	4
Western Power of San Francisco, common	..	26	26½
Western Union Telegraph of New York	..	..	83
Industrials—			
General Electric of Schenectady	8	126	125
Westinghouse Electric & Mfg. of Pittsburgh, common	7	45½	44